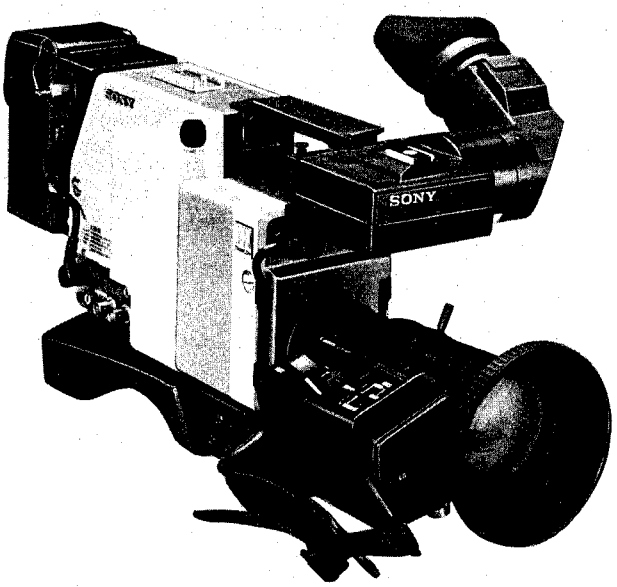
SMF "TRINICON" COLOR VIDEO CAMERA
ELECTRONIC VIEWFINDER
BATTERY ADAPTOR

DXC-1820/1821
DXC-1820P/1821P
DXC-1820PM
DXF-1820
DXF-1820CE
DC-6

Revised-1



SONY®
SERVICE MANUAL

SAFETY RELATED COMPONENT WARNING

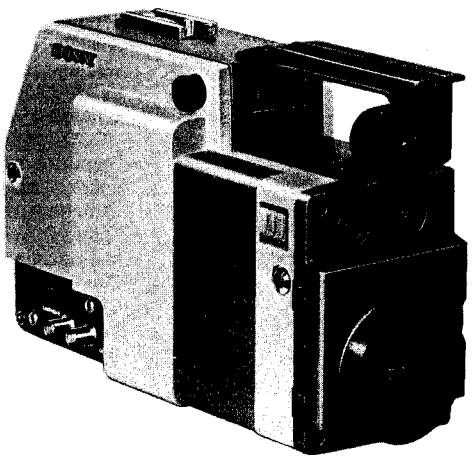
Components identified by shading and ⚠ marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

X-RAY RADIATION WARNING

Be sure that parts replacement in the high voltage block and adjustments made to the high voltage circuits are carried out precisely in accordance with the procedures given in this manual.

COLOR VIDEO CAMERA HEAD

DXC-820/820P
DXC-820A/820AP
DXC-820PM



SONY

SERVICE MANUAL

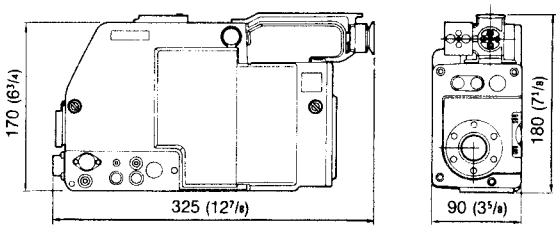
SPECIFICATIONS (for NTSC)

Camera (DXC-1820/1821)

Pickup tube	2/3-inch SMF Trinicon
Built-in filters	1: Iodine lamp, sunrise, sunset 2: Bright outdoor 3: Cloudy, rainy 4: White fluorescent light
Lens mount	DXC-1820: S mount DXC-1821: C mount
Signal system	EIA standards, NTSC color system
Scanning system	525 lines 2:1 interlace 30 frames/sec.
Sync system	Internal External with the VBS or BS signal supplied to the GEN LOCK IN connector or the camera cable connector (through the GEN LOCK connector of the CCU-1800)
Horizontal frequency	15.73426 kHz
Vertical frequency	59.94 Hz
Horizontal resolution	300 lines (center)
Minimum illumination	40 lux (4 footcandles) with F1.6, +18 dB, video output level 100%
Sensitivity	2,000 lux (200 footcandles) with F4, at 3200°K
Video output levels	AUTO, 0 dB, 6 dB, 12 dB, or 18 dB, selectable
Video output	1.0 V(p-p), sync negative, 75 ohms, unbalanced
Signal-to-noise ratio	53 dB (signal current 0.2 μA(p-p), Bandwidth 4.0 MHz, preamp output)
Outputs	Camera cable connector*: Sony Q-type, 14-pin VIDEO OUT: BNC-type EARPHONE: mini INTERCOM: mini intercom *Video output, microphone output, power input, recording and playback picture, etc.
Microphone	Built-in microphone: Electret condenser microphone, omnidirectional EXT MIC jack: mini, −60 dBs, mic impendance less than 600 ohms
Power requirements	12 V dc
Power consumption	12 W (for camera only)
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +50°C (−4°F to +122°F)
Weight	Approx. 2.9 kg (6 lb 6 oz)

Dimensions

Unit: mm (inches)



Accessories supplied

DXC-1820/1820K/1820KA:
- Viewfinder DXF-1820 (1)
- Battery adaptor DC-6 (1)
- Shoulder pad VCT-1820 (1)
- Carrying case LC-1820 (1)
- Camera cable CCQ-2AR (with Q-type 14-pin connecters, 2 meters) (1)
- Zoom lens VCL-1010SY (supplied with the DXC-1820K only) (1)
- Zoom lens VCL-1012SY (supplied with the DXC-1820KA only) (1)

DXC-1821H:
- Camera cable CCQ-2AR (with Q-type 14-pin connectors, 2 meters) (1)

Design and specifications subject to change without notice.

RECOMMENDED EQUIPMENT AND ACCESSORIES

Flexible cable unit (for the VCL-1010SY zoom lens) LO-24Z (for zooming), LO-24F (for focusing)
Servo control unit (for the VCL-1010SY zoom lens) LO-24ZS
Lens remote control unit (for the VCL-1012SY zoom lens) LO-25
Camera cable with Q-type 14-pin and K-type 14-pin connectors CCQK-2
Camera cable with Q-type 14-pin connectors CCQ-5AR, CCQ-10AR, CCQ-25AR, CCQ-50AR
Camera cable with Q-type 14-pin and J-type 10-pin connectors CCQJ-2
Zoom lens (with S mount) VCL-1010SY, VCL-1012SY
Zoom lens (with C mount) VCL-1110YA, VCL-1106YB
Microscope video camera adaptor MVA-11
Endoscope adaptor MVA-102
Camera control unit CCU-1800
Intercom headset DR-100
Back electret condenser microphone ECM-K100
Zoom microphone ECM-Z300
External microphone shoe SAD-100
Electronic viewfinder (5-inch) DXF-50
Electronic viewfinder (4-inch) DXF-40
Color video monitor PVM-4000
Portable videocassette recorder VO-4800
Special-effects generator SEG-2000A
Universal chroma keyer CRK-2000
Wipe pattern extender WEX-2000
Battery pack BP-60
AC power adaptor CMA-7
Rack mounting metal RMM-1800
Tripod attachment VCT-12

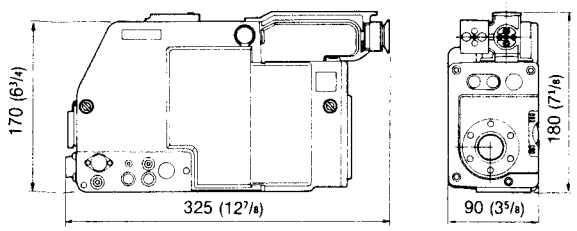
SPECIFICATIONS (for PAL)

Camera (DXC-1820P/1821P)

Pickup tube	2/3-inch SMF Trinicon
Built-in filters	1: Iodine lamp, sunrise, sunset 2: Bright outdoor 3: Cloudy, rainy 4: White fluorescent light
Lens mount	DXC-1820P: S mount DXC-1821P: C mount
Signal system	CCIR standards, PAL color system
Scanning system	625 lines 2:1 interlace 25 frames/sec.
Sync system	Internal External with the VBS or BS signal supplied to the GEN LOCK IN connector or the camera cable connector (through the GEN LOCK connector of the CCU-1800P)
Horizontal frequency	15.625 kHz
Vertical frequency	50 Hz
Horizontal resolution	300 lines (center)
Minimum illumination	40 lux (4 footcandles) with F1.6, +18 dB, video output level 100%
Sensitivity	2,000 lux (200 footcandles) with F4, at 3200°K
Video output levels	AUTO, 0 dB, 6 dB, 12 dB, or 18 dB, selectable
Video output	1.0 V(p-p), sync negative, 75 ohms, unbalanced
Signal-to-noise ratio	53 dB (signal current 0.2 μA(p-p), Bandwidth 4.0 MHz, preamp output)
Outputs	Camera cable connector*: Sony Q-type, 14-pin VIDEO OUT: BNC-type EARPHONE: mini INTERCOM: mini intercom *Video output, microphone output, power input, recording and playback picture, etc.
Microphone	Built-in microphone: Electret condenser microphone, omnidirectional EXT MIC jack: mini, −60 dBs, mic impendance less than 600 ohms
Power requirements	12 V dc
Power consumption	12 W (for camera only)
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +50°C (−4°F to +122°F)
Weight	Approx. 2.9 kg (6 lb 6 oz)

Dimensions

Unit: mm (inches)



Accessories supplied

DXC-1820P/1820PK/1820PKA:
- Viewfinder DXF-1820CE (1)
- Battery adaptor DC-6 (1)
- Shoulder pad VCT-1820 (1)
- Carrying case LC-1820 (1)
- Camera cable CCQ-2AR (with Q-type 14-pin connecters, 2 meters) (1)
- Zoom lens VCL-1010SY (supplied with the DXC-1820PK only) (1)
- Zoom lens VCL-1012SY (supplied with the DXC-1820PKA only) (1)

DXC-1821PH:
- Camera cable CCQ-2AR (with Q-type 14-pin connectors, 2 meters) (1)

While the information given is true at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications.

RECOMMENDED EQUIPMENT AND ACCESSORIES

Flexible cable unit (for the VCL-1010SY zoom lens) LO-24Z (for zooming), LO-24F (for focusing)
Servo control unit (for the VCL-1010SY zoom lens) LO-24ZS (for zooming, VTR start/stop and return video)
Lens remote control unit (for the VCL-1012SY zoom lens) LO-25
Camera cable with Q-type 14-pin and K-type 14-pin connectors CCQK-2
Camera cable with Q-type 14-pin connectors CCQ-5AR, CCQ-10AR, CCQ-25AR, CCQ-50AR
Camera cable with Q-type 14-pin and J-type 10-pin connectors CCQJ-2
Zoom lens (with S mount) VCL-1010SY, VCL-1012SY
Zoom lens (with C mount) VCL-1110YA, VCL-1106YB
Microscope video camera adaptor MVA-11
Endoscope adaptor MVA-102
Camera control unit CCU-1800P
Intercom headset DR-100
Back electret condenser microphone ECM-K100
Zoom microphone ECM-Z300
External microphone shoe SAD-100
Electronic viewfinder (5-inch) DXF-50CE
Electronic viewfinder (4-inch) DXF-40CE
Color video monitor PVM-4000P
Portable videocassette recorder VO-4800PS
Special-effects generator SEG-2000AP
Universal chroma keyer CRK-2000P
Wipe pattern extender WEX-2000P
Battery pack BP-60
AC power adaptor CMA-7CE
Rack mounting metal RMM-1800
Tripod attachment VCT-12

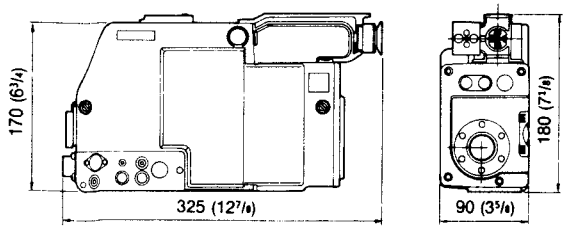
SPECIFICATIONS (for PAL-M)

Camera (DXC-1820PMK)

Pickup tube	2/3-inch SMF Trinicon
Built-in filters	1: Iodine lamp, sunrise, sunset 2: Bright outdoor 3: Cloudy, rainy 4: White fluorescent light
Lens mount	DXC-1820PM: S mount
Signal system	PAL-M color system
Scanning system	525 lines 2:1 interlace 30 frames/sec.
Sync system	Internal External with the VBS or BS signal supplied to the GEN LOCK IN connector or the camera cable connector (through the GEN LOCK connector of the CCU-1800PM)
Horizontal frequency	15.73426 kHz
Vertical frequency	59.94 Hz
Horizontal resolution	300 lines (center)
Minimum illumination	40 lux (4 footcandles) with F1.6, +18 dB, video output level 100%
Sensitivity	2,000 lux (200 footcandles) with F4, at 3200°K
Video output levels	AUTO, 0 dB, 6 dB, 12 dB, or 18 dB, selectable
Video output	1.0 V(p-p), sync negative, 75 ohms, unbalanced
Signal-to-noise ratio	53 dB (signal current 0.2 μA(p-p), Bandwidth 4.0 MHz, preamp output)
Outputs	Camera cable connector*: Sony Q-type, 14-pin VIDEO OUT: BNC-type EARPHONE: mini INTERCOM: mini intercom *Video output, microphone output, power input, recording and playback picture, etc.
Microphone	Built-in microphone: Electret condenser microphone, omnidirectional EXT MIC jack: mini, −60 dBs, mic impendance less than 600 ohms
Power requirements	12 V dc
Power consumption	12 W (for camera only)
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +50°C (−4°F to +122°F)
Weight	Approx. 2.9 kg (6 lb 6 oz)

Dimensions

Unit: mm (inches)



Accessories supplied

DXC-1820PMK:
- Viewfinder DXF-1820 (1)
- Battery adaptor DC-6 (1)
- Shoulder pad VCT-1820 (1)
- Carrying case LC-1820 (1)
- Camera cable CCQ-2AR (with Q-type 14-pin connecters, 2 meters) (1)
- Zoom lens VCL-1012SY (1)

Design and specifications subject to change without notice.

RECOMMENDED EQUIPMENT AND ACCESSORIES

Lens remote control unit (for the VCL-1012SY zoom lens) LO-25
Camera cable with Q-type 14-pin and K-type 14-pin connectors CCQK-2
Camera cable with Q-type 14-pin connectors CCQ-5AR, CCQ-10AR, CCQ-25AR, CCQ-50AR
Camera cable with Q-type 14-pin and J-type 10-pin connectors CCQJ-2
Zoom lens (with S mount) VCL-1012SY
Microscope video camera adaptor MVA-11
Endoscope adaptor MVA-102
Camera control unit CCU-1800PM
Intercom headset DR-100
Back electret condenser microphone ECM-K100
Zoom microphone ECM-Z300
External microphone shoe SAD-100
Electronic viewfinder (5-inch) DXF-50
Electronic viewfinder (4-inch) DXF-40
Color video monitor PVM-4000
Portable videocassette recorder VO-4800PM
Special-effects generator SEG-2000APM
Universal chroma keyer CRK-2000PM
Wipe pattern extender WEX-2000PM
Battery pack BP-60
AC power adaptor CMA-7
Rack mounting metal RMM-1800
Tripod attachment VCT-12

TABLE OF CONTENTS

1. GENERAL DESCRIPTION

1-1. Composition 1-1
1-2. Features 1-2
1-3. Precautions 1-3
1-4. Location and Function of Controls 1-4
1-5. Power Sources 1-15
1-6. Connections 1-18
1-7. Adjustments 1-21
1-8. Operation 1-25
1-9. Tips for Shooting and Effective Camera Work .. 1-32
1-10. Studio Use 1-33

2. REPLACEMENT OF MAIN PARTS

2-1. Removal of Pick-up Tube 2-1
2-2. Installation of Pick-up Tube 2-2
2-3. Modification 2-4
2-3-1. Modification from DXC-1820 to DXC-1821 2-4
2-3-2. Modification from DXC-1821 to DXC-1820 2-5

3. ALIGNMENT

3-1. Preparation 3-1
3-1-1. Connection 3-1
3-1-2. Switch Setting Positions before Adjustment 3-1
3-1-3. Adjustment Procedure 3-1
3-1-4. Adjustment Fixtures and Equipments.. 3-2
3-2. Mechanical Adjustment 3-3
3-2-1. Mechanical Back Focus Adjustment ... 3-3
3-2-2. Pickup Tube Horizontal Position Adjustment 3-4
3-3. Power Supply System 3-5
3-3-1. +5V Adjustment 3-5
3-3-2. −5V Adjustment 3-5
3-4. Sync Generator System 3-6
3-4-1. Subcarrier Frequency Adjustment 3-6
3-4-2. H. BLKG Width Adjustment 3-6
3-4-3. V. BLKG Width Adjustment 3-7
3-4-4. Converter Trigger Pulse Phase Adjustment 3-8
3-5. Deflection System 3-9
3-5-1. H. Deflection Balance Adjustment 3-9
3-5-2. V. Deflection Balance Adjustment 3-9
3-5-3. Electrical Focus Adjustment 3-10
3-5-4. H. Deflection Size Adjustment 3-10
3-5-5. H. Centering Adjustment 3-11
3-5-6. CLP1, CLP2 Pulse Phase Adjustment 3-11
3-5-7. Mechanical Centering Adjustment 3-12
3-5-8. V. Deflection Size Adjustment 3-13
3-5-9. V. Centering Adjustment 3-14
3-6. Y. System 3-15
3-6-1. Beam Set, ABO Adjustment 3-15
3-6-2. Bias Light Adjustment 3-16
3-6-3. Y. Shading Offset Adjustment 3-17
3-6-4. H. Shading Adjustment 3-18
3-6-5. V. Shading Adjustment 3-19
3-6-6. Black Level Set Adjustment-I 3-20
3-6-7. Gain Adjustment 3-20
3-6-8. AGC Adjustment 3-22
3-6-9. H.F. LIMIT Adjustment 3-23
3-6-10. POSI Gamma Adjustment 3-24
3-6-11. NEGA Gamma Adjustment 3-26
3-6-12. POSI Ys Adjustment 3-27
3-6-13. NEGA Ys Adjustment 3-27
3-6-14. Black Level Set Adjustment-II 3-28
3-6-15. Setup Adjustment 3-28
3-6-16. Y. Level Adjustment 3-29
3-6-17. NEGA Setup Adjustment 3-29
3-6-18. 14P Video Level Adjustment 3-30
3-6-19. Sync Level Adjustment 3-30
3-6-20. Burst Level Adjustment 3-31
3-6-21. White Clip Adjustment 3-31
3-6-22. H. DTL Adjustment 3-32
3-6-23. V. DTL Adjustment 3-33
3-6-24. MANUAL Iris Adjustment-1 3-34
3-6-25. POSI Auto Iris Adjustment 3-34
3-6-26. NEGA Auto Iris Adjustment 3-35
3-6-27. Low Video Set Adjustment 3-36
3-7. Chroma System 3-37
3-7-1. Color-bar White Balance Adjustment .. 3-37
3-7-2. Color-bar Y Level Adjustment 3-38
3-7-3. Color-bar Carrier Balance Adjustment 3-39
3-7-4. Color-bar Width Adjustment 3-40
3-7-5. Burst Phase Adjustment 3-41
3-7-6. Color-bar Vector Adjustment 3-42
3-7-7. Carrier Balance Adjustment 3-43
3-7-8. Chroma Gamma Adjustment 3-43
3-7-9. Yw Black Clip Adjustment 3-44
3-7-10. R-Y Axis Adjustment 3-44
3-7-11. PRESET White Balance Adjustment 3-45
3-7-12. Chroma Cancel Adjustment 3-46
3-7-13. Chroma Linecrawl Adjustment 3-48/49
3-7-14. Color Adjustment 3-50
3-7-15. Color Shading Adjustment 3-51
3-7-16. Lens Color Shading Adjustment 3-52/53
3-8. Others 3-55
3-8-1. INTERCOM Adjustment 3-55

4. DIAGRAM

4-1. Block Diagram 4-1
Overall 4-1
PR-46 Board 4-4
CR-21 Board 4-7
DF-21 Board 4-10
4-2. Mounting Diagram and Schematic Diagram Location of Mounted Circuit Board 4-14
PA-29 Board 4-14
PA-46 Board • VE-5 Board 4-17
CR-21 Board 4-23
DF-21 Board 4-29
AU-47 Board • CT-45 Board • JK-8 Board 4-34
Frame 4-37
IR-5 Board 4-40

5. SEMICONDUCTOR ELECTRODES

6. SPARE PARTS

SECTION 1
GENERAL DESCRIPTION

NOTICE

NOTICE for PAL system

Please read the model number A as B wherever it appears in the Section 1 GENERAL DESCRIPTION.

A	B
DXC-1820	DXC-1820P
DXC-1821	DXC-1821P
DXC-1820K	DXC-1820PK
DXC-1820KA	DXC-1820PKA
DXF-1820	DXF-1820CE
CCU-1800	CCU-1800P
VO-4800	VO-4800P
BVU-50	BVU-50P
BVU-110	BVU-110P
SEG-2000A	SEG-2000AP
CRK-2000	CRK-2000P
WEX-2000	WEX-2000P
DXF-40	DXF-40CE
DXF-50	DXF-50CE
PVM-4000	PVM-4000P
CMA-7	CMA-7CE

NOTICE for PAL-M system

Please read the model number DXC-1820 as "DXC-1820PM" wherever it appears in the SECTION 1 GENERAL DESCRIPTION.
The DXC-1820PM is different from the DXC-1820 in the following ways.

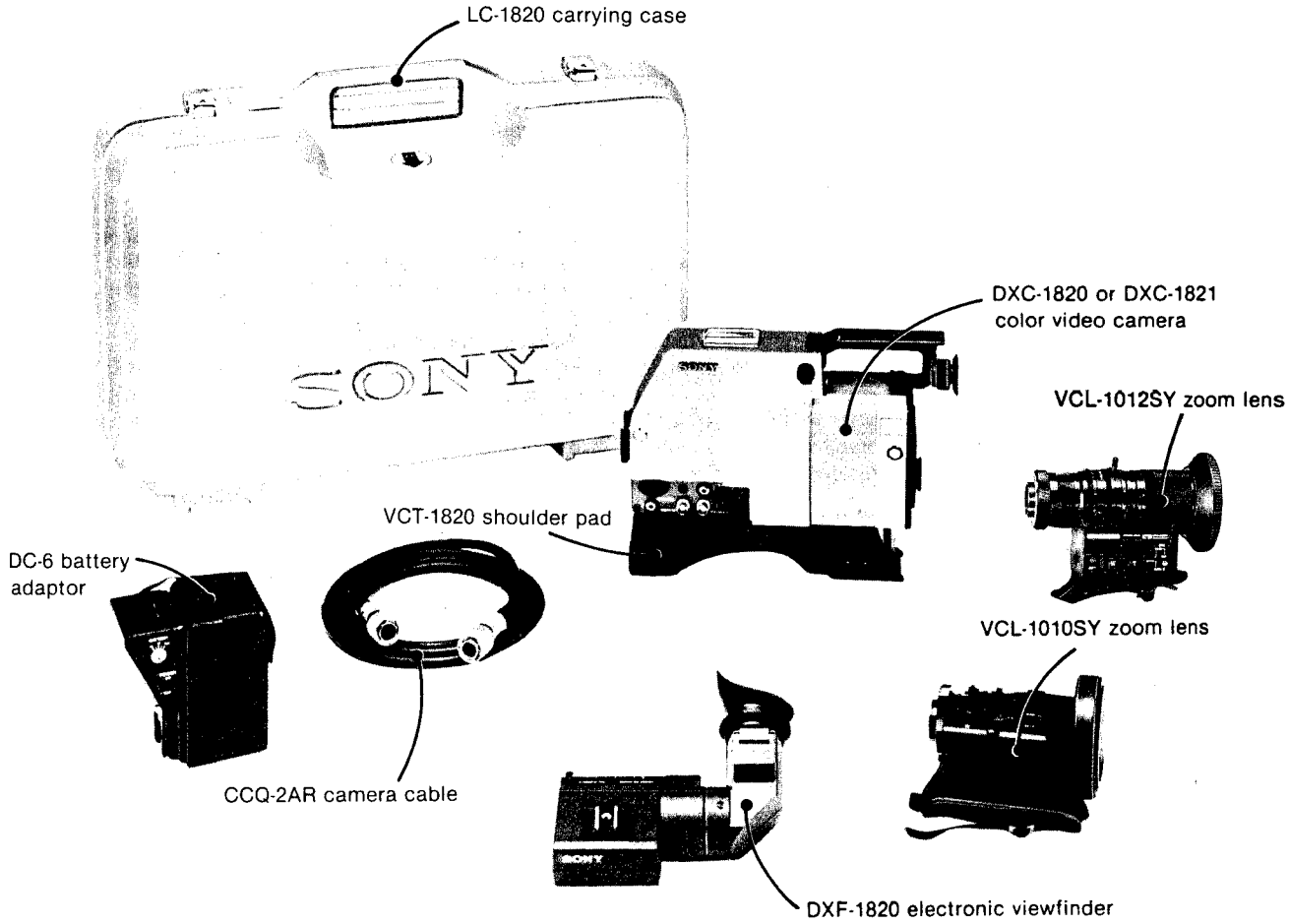
- On page 1-1 of the SECTION 1 : In "COMPOSITION", three types of color video camera kits are described. However, only one type of kit is available in your country : the DXC-1820PMK. The DXC-1820PMK is comprised of the following components :
  - Color video camera DXC-1820PM
  - Zoom lens VCL-1012SY
  - Electronic viewfinder DXF-1820
  - Battery adaptor DC-6
  - Shoulder pad VCT-1820
  - Carrying case LC-1820
  - Camera cable CCQ-2AR

- Please read the model numbers of recommended equipment and optional accessories as follows wherever they appear in the SECTION 1 : CCU-1800 as "CCU-1800PM" or "CCU-1820", VO-4800 as "VO-4800PM", BVU-50 as "BVU-50PM", BVU-110 as "BVU-110PM", SEG-2000A as "SEG-2000APM", CRK-2000 as "CRK-2000PM" and WEX-2000 as "WEX-2000PM".

1-1. COMPOSITION

The DXC-1820, the DXC-1820K, DXC-1820KA and the DXC-1821H have slightly different components, as noted below ; however, the operating procedure for the camera itself is the same. The DXC-1820 and DXC-1821 color video cameras are different only in the lens mount. The lens mount of the DXC-1820 is the S mount which is specially designed by Sony, and that of the DXC-1821 is the conventional C mount.

For the operation of the lens,this manual describes only the use of the VCL-1010SY zoom lens which is a component of the DXC-1820K and VCL-1012SY zoom lens which is a component of the DXC-1820KA. If you use a zoom lens other than the VCL-1010SY or VCL-1012SY, refer to the lens' instruction manual for information about its operation.



	DXC-1820	DXC-1820K	DXC-1820KA	DXC-1821H
Color video camera DXC-1820	Yes	Yes	Yes	No
Viewfinder DXF-1820	Yes	Yes	Yes	No
Battery adaptor DC-6	Yes	Yes	Yes	No
Shoulder pad VCT-1820	Yes	Yes	Yes	No
Carrying case LC-1820	Yes	Yes	Yes	No
Zoom lens VCL-1010SY	No	Yes	No	No
Zoom lens VCL-1012SY	No	No	Yes	No
Camera cable CCQ-2AR	Yes	Yes	Yes	Yes
Color video camera DXC-1821	No	No	No	Yes

The lens mount of the DXC-1820 color video camera is the S mount which is designed by Sony. This mount firmly attaches the lens to the camera and allows you to hold the camera by the lens while recording with the camera resting on your shoulder.
The lens mount of the DXC-1821 is the C mount, which is adaptable to conventional optical equipment, such as a video camera microscope adaptor, endoscope adaptor, etc. Therefore, the DXC-1821 color video camera can be used for medical, educational and industrial purposes.

1-2. FEATURES

2/3-inch SMF Trinicon *
The 2/3-inch SMF Trinicon pickup tube increases the uniformity and the quality of the picture, the sensitivity and the resolution, and minimizes lag.

* Trademark of Sony Corporation

Automatic video output level control
The video output level control can be set to a fixed output level or set to automatically adjust.
In the automatic position, the Automatic Gain Control (AGC) circuit is activated to maintain the video output level as its optimum value. With the DXC-1820K or DXC-1820KA, the automatic iris control system of the supplied VCL-1010SY or VCL-1012SY zoom lens and the AGC circuit allow you to obtain a stable picture under a wide range of lighting conditions.
You can also set output level at 0 dB, 6 dB, 12 dB or 18 dB.

Automatic white balance adjustment and preset white balance
The white balance is automatically adjusted by a microcomputer depending upon the filter being used, and the adjusted value is stored in the digital memory even when the power is off.
When the WHITE BAL switch is set to PRESET, a white balance of 3200°K is obtained. This allows you to start recording without the need to adjust the white balance.

Automatic beam optimizer
An automatic beam optimizer allows the camera to accept a light input that exceeds normal levels without causing comet tails or blooming.

Motorized 10 × F1.6 zoom lens (supplied with the DXC-1820K only)
The lens has a motorized 10x zooming (f = 10.5 mm to 105 mm) mechanism, macro function and auto iris. The macro function makes it possible to move in very close for shots of small objects. When attaching and detaching a lens filter, the lens hood can be folded down.

Motorized 12× F1.6 zoom lens (supplied with the DXC-1820KA only)
The lens has a motorized 12x zooming (f = 10.5 mm to 126 mm) mechanism, macro function and auto iris. The macro function makes it possible to move in very close for shots of small objects. When attaching and detaching a lens filter, the lens hood can be folded down.

Auto-close mechanism (DXC-1820K/1820KA only)
The lens automatically closes to protect the pickup tube when the power to the camera is turned off.

DXF-1820 electronic viewfinder (supplied with the DXC-1820/1820K/1820KA only)
The recording picture can be monitored using the DXF-1820 electronic viewfinder. The playback picture and the return video picture can be viewed when the camera and a VTR are connected with a CCQ camera cable.

Warning system in the viewfinder (DXC-1820 /1820K /1820KA only)
If (1) there is a problem with the VTR or the tape, (2) the battery is weak, (3) the lighting is insufficient, or (4) the video output level is too low, warning indicators in the viewfinder will light up.

Versatile connection capability
Various types of VTRs, such as VTRs equipped with a Q-type 14-pin camera connector (such as a Sony VO-4800, BVU-50 or BVU-110 videocassette recorder) or VTRs with a K-type 14-pin camera connector (such as a Sony SL-2000 videocassette recorder), can be connected to this camera.

Fader
The fader makes it possible to record with fade-in and fade-out for more professional results. The fade time can be adjusted from 0 seconds to about 5 seconds.

Change to a negative picture
The camera picture can be reversed to provide a negative picture for special effect.

Use as a studio camera
The camera can be used as a studio camera when connected to a CCU-1800 camera control unit. The CCU can remotely control most of the functions of the camera.

Four-way power supply
The camera can be powered from a BP-60 battery pack (using the DC-6 battery adaptor), a portable VTR, or a CCU-1800 camera control unit, or it can be operated on ac power using the CMA-7 ac power adaptor.

Low power consumption
The BP-60 battery pack can provide power for about 1 hour and 30 minutes of continuous operation.

Other features
- Color temperature conversion filters for optimum color balance both indoors and outdoors.
- Built-in color bar generator.
- One-line image enhancer.
- Built-in electret condenser microphone.
- Lightweight, rigid aluminum diecast body.

1-3. PRECAUTIONS

On operation

To ensure top performance and long operating life of the pickup tube, follow these precautions.

- Do not point the viewfinder directly at the sun, or the plastic inside the viewfinder may be damaged.
- Avoid rough handling or mechanical shock, especially when the lens faces downward.
- Do not operate the camera outside a 0°C to + 40°C (32°F to 104°F) temperature range.
- Keep the camera in a horizontal plane.
- Keep the camera away from strong magnetic fields to avoid causing distortion and flutter on the screen.
- Do not hold the camera by the viewfinder.
- Clean the cabinet, panel and controls with a dry soft cloth, or soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.
- Do not discard the carton. It affords maximum protection whenever the camera is transported. Do not transport or ship the camera only in the carrying case. Repack it as it was originally packed at the factory.

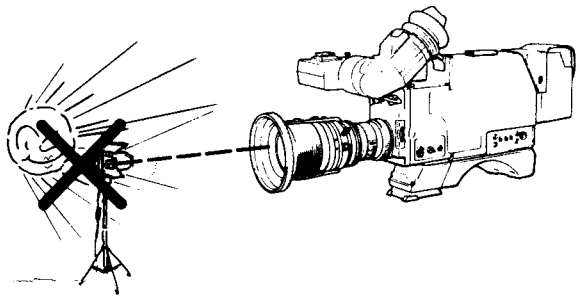
BE CAREFUL NOT TO BURN THE PICKUP TUBE

If a strong, bright light, such as direct sunlight, enters the pickup tube, the tube may be burned. To avoid this:

Before turning the power on, be sure to check that no light can enter the pickup tube. After turning the power on, wait for about 15 seconds until the pickup tube is warmed up before operating the camera.

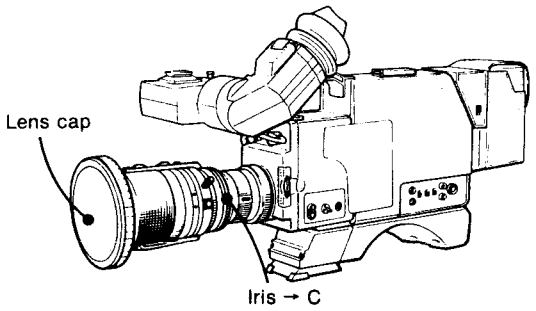
When the camera is being used,

- Never point the camera directly at the sun or a source of bright light.
- Avoid the continuous shooting of lamps or of an object in strong light. If it is necessary to do so, use an ND filter or close the iris as much as possible.



When the camera is not being used, avoid letting light enter the pickup tube by:

- Attaching the lens cap.
- Setting the iris to the C (closed) position.
- Turning off the lighting source.
- Attaching the cap to the lens mount when the lens is detached for storage.



If the pickup tube is burned:

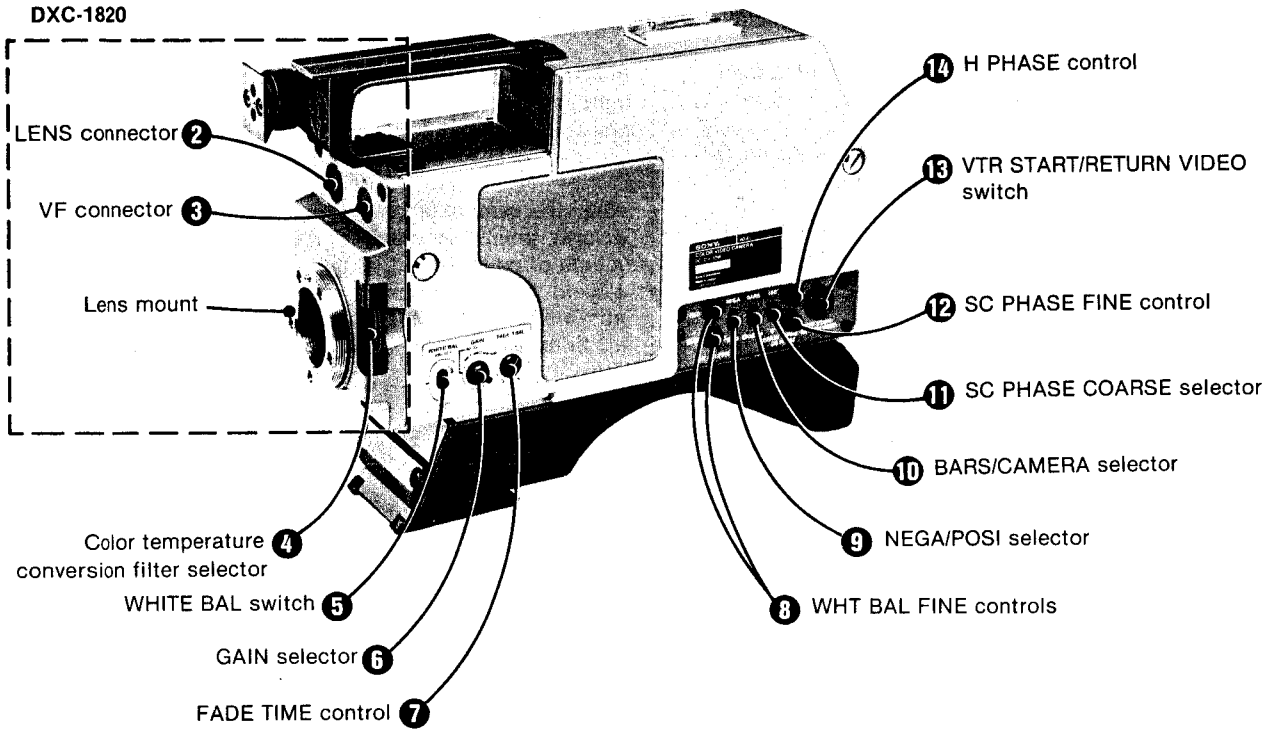
Turn off the power, set the iris to the C (closed) position and keep the camera under normal temperature for about one day. In most cases, the pickup tube will recover within a day. In some cases, if the pickup tube is seriously burned, it will take more than one day.

1-4. LOCATION AND FUNCTION OF CONTROLS

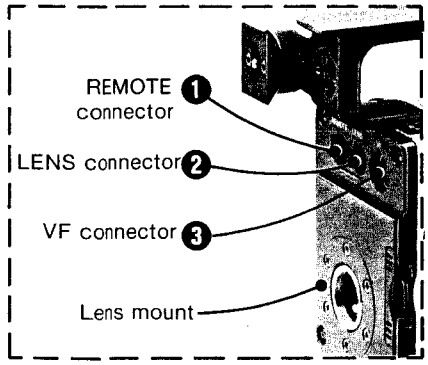
Each number in the photo is keyed to the descriptive text.

DXC-1820/1821 COLOR VIDEO CAMERA

DXC-1820



DXC-1821



❶ REMOTE connector (for the DXC-1821 only)
When a Sony VCT-8 brace (optional) is attached to the camera, connect the connector plug of the brace here. The starting and stopping of recording and the control of motorized zooming can be performed using the buttons on the brace.

❷ LENS connector
Connect the lens connector plug of the lens.

❸ VF (viewfinder) connector
Connect the plug of the viewfinder.

❹ Color temperature conversion filter selector
Select the appropriate filter as indicated below.

Filter number	Lighting conditions
1	Iodine lamp, sunrise or sunset
2	Bright outdoor
3	Cloudy or rainy
4	White fluorescent light

❺ WHITE BAL (balance) switch
Set this switch to the center position for normal operation.
PRESET: At this position the white balance is fixed at the factory preset value of an iodine lamp (3200°K). When the selector is in this position, set the color temperature conversion filter selector ❹ to the appropriate position. Use this position when you do not have time to adjust the white balance.
AUTO: While pointing the camera at a white object, set the WHITE BAL switch to this position. The white balance will be automatically adjusted, and the adjusted value will be entered in the memory.

❻ GAIN selector
Selects the video output level.
AUTO: The video output level is adjusted automatically so that the picture is clear and well-contrasted.
0 dB: Normally set the selector to this position.
6, 12 and 18 dB: When the selector is set to "6", "12" or "18", the video output level is raised by 6 dB, 12 dB or 18 dB respectively.

❼ FADE TIME control
The fade-in and fade-out time can be adjusted from 0 seconds to about 5 seconds. Normally set the control to "0".

❽ WHT BAL (white balance) FINE controls
Normally set these controls to the center detent position.
After the automatic white balance adjustment has been completed, if you wish to add a tint, adjust the RED and BLUE controls alternately in order to obtain the color with the desired tint.
After use, return these controls to the center detent position.

❾ NEGA/POSI (negative/positive) selector
NEGA: In this position the camera picture is reversed to a negative picture. Use this position for special effects.
POSI: In this position the normal camera picture is obtained. Normally set the selector to this position.

❿ BARS/CAMERA selector
BARS: When the selector is set to this position, a color bar signal is generated and supplied to the viewfinder and the video monitor. Use this position for adjusting the video monitor. In this position, the iris of the zoom lens which is attached to the camera will be automatically closed. (If the lens in use is not equipped with an auto iris, close the iris manually to protect the pickup tube.)
CAMERA: The camera pictures are output from the camera. Normally set the selector to this position.

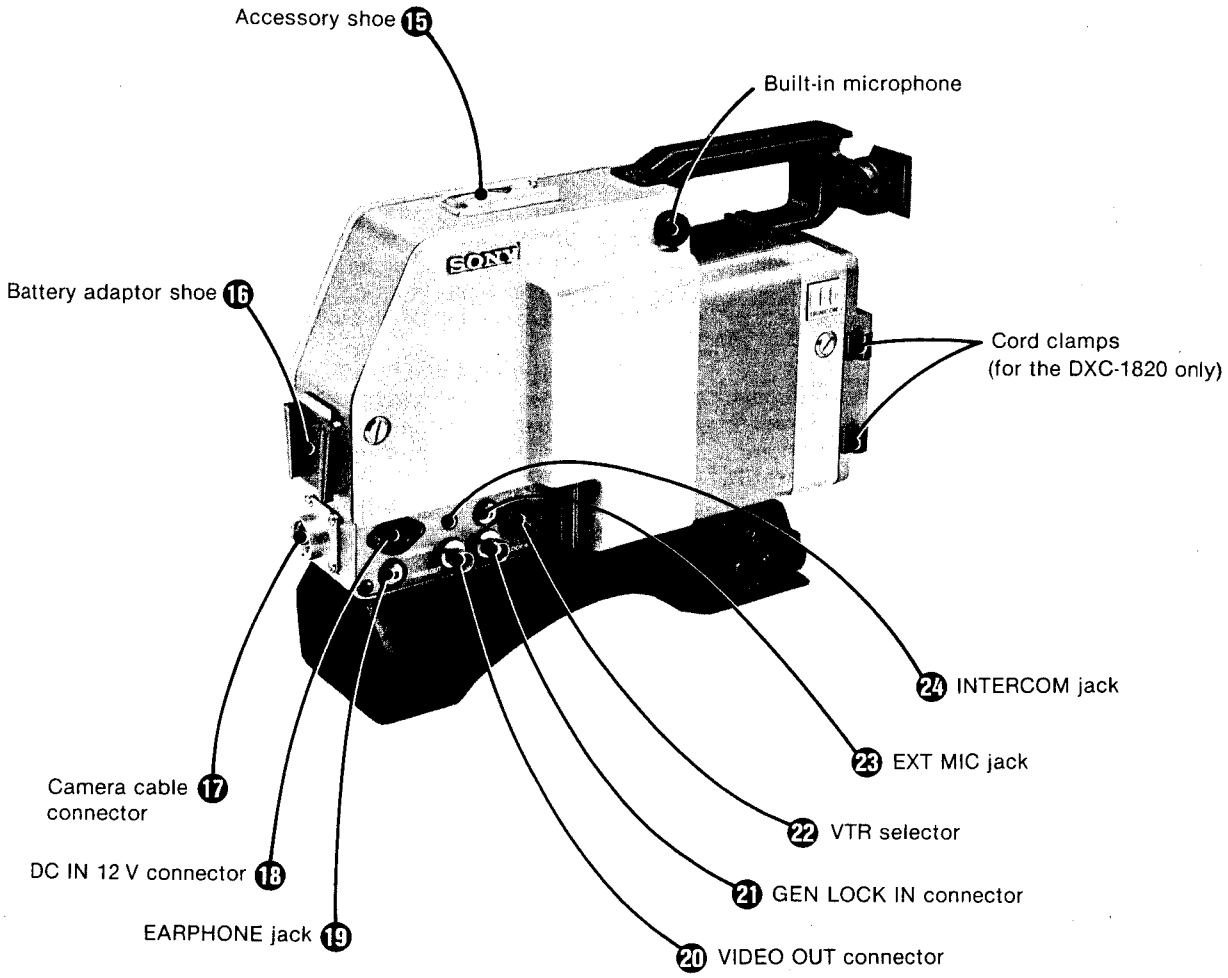
⓫ SC (subcarrier) PHASE COARSE selector
When two or more cameras are used simultaneously, select the SC phase difference between the gen-lock input and video output signals so that it is roughly adjusted to 0° or 180°.

⓬ SC (subcarrier) PHASE FINE control
When two or more cameras are used, this control is used for fine adjustment of the SC phase after the rough adjustment performed by the SC PHASE COARSE selector ⓫

⓭ VTR START/RETURN VIDEO switch
When the camera is connected to a portable VTR, press this switch to start recording. To stop recording, press the switch again.
If the camera is connected to a camera control unit (CCU), the return video pictures can be monitored on the viewfinder screen while the switch is depressed. When the switch is released, the camera pictures can be monitored.

⓮ H (horizontal) PHASE control
When two or more cameras are used, turn this control with a small screwdriver to adjust the H phase difference between the gen-lock input and video output signals.

Note
It is not necessary to use this control when only one camera is used.
When a CCU is connected, adjust the H phase difference with the H PHASE control of the CCU.



⑮ Accessory shoe
An optional ECM-K100 or ECM-Z300 microphone, an optional DXF-40 or DXF-50 viewfinder, or an optional PVM-4000 color video monitor can be attached here.

⑯ Battery adaptor shoe
Attach the DC-6 battery adaptor here.

⑰ Camera cable connector (Sony Q type, 14-pin)
This is the camera's main input/output connector. Connect a VTR, a CCU-1800 camera control unit or a CMA-7 ac power adaptor to this connector using a CCQ camera cable.

⑱ DC IN (input) 12 V connector
Connect the plug of the DC-6 battery adaptor to supply power from the battery.

Note
When the battery adaptor is connected to this connector, the camera cannot be operated with other power sources.

⑲ EARPHONE jack (mini jack)
Connect an earphone to monitor the playback or recording sound from the VTR.

⑳ VIDEO OUT (output) connector (BNC connector)
Connect to the video input of a VTR or video monitor.

㉑ GEN LOCK IN (input) connector (BNC connector)
When using more than two cameras simultaneously without using a CCU, connect the gen-lock input signal (VBS or BS) for synchronization here. No connection is necessary when only one camera is used.

㉒ VTR selector
Selects the VTR start/stop signal modes and the audio output level (microphone level) in accordance with the type of VTR used.

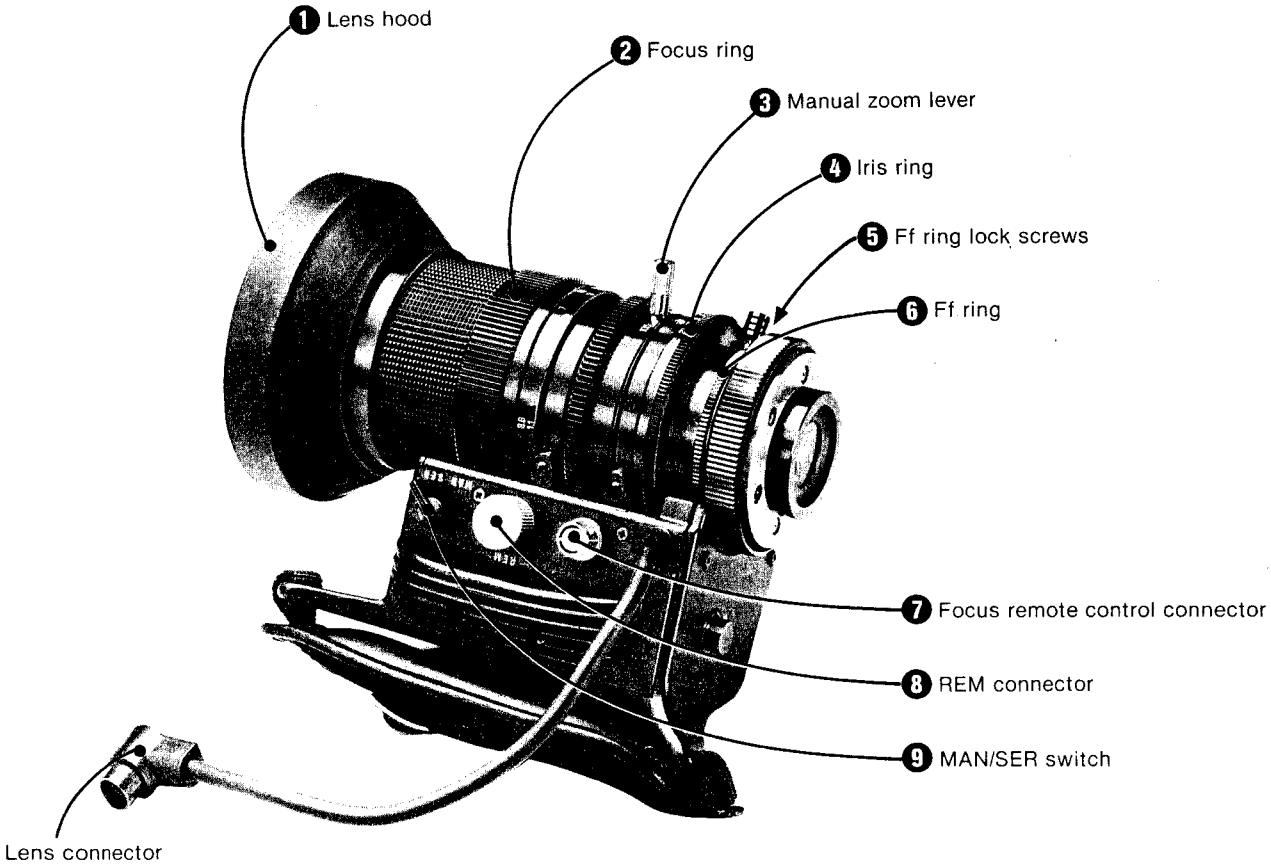
1: For a VTR equipped with a Q-type (14-pin) camera connector (such as the Sony VO-4800, BVU-110, etc.) or for a CCU.
2: For a VTR equipped with a K-type (14-pin) camera connector (such as the Sony SL-2000 or other Betamax VTRs used for home-entertainment).
3: For a VHS format VTR manufactured by JVC. For details, refer to page 1-20.
4: For a VHS format VTR manufactured by Panasonic. For details, refer to page 1-20.

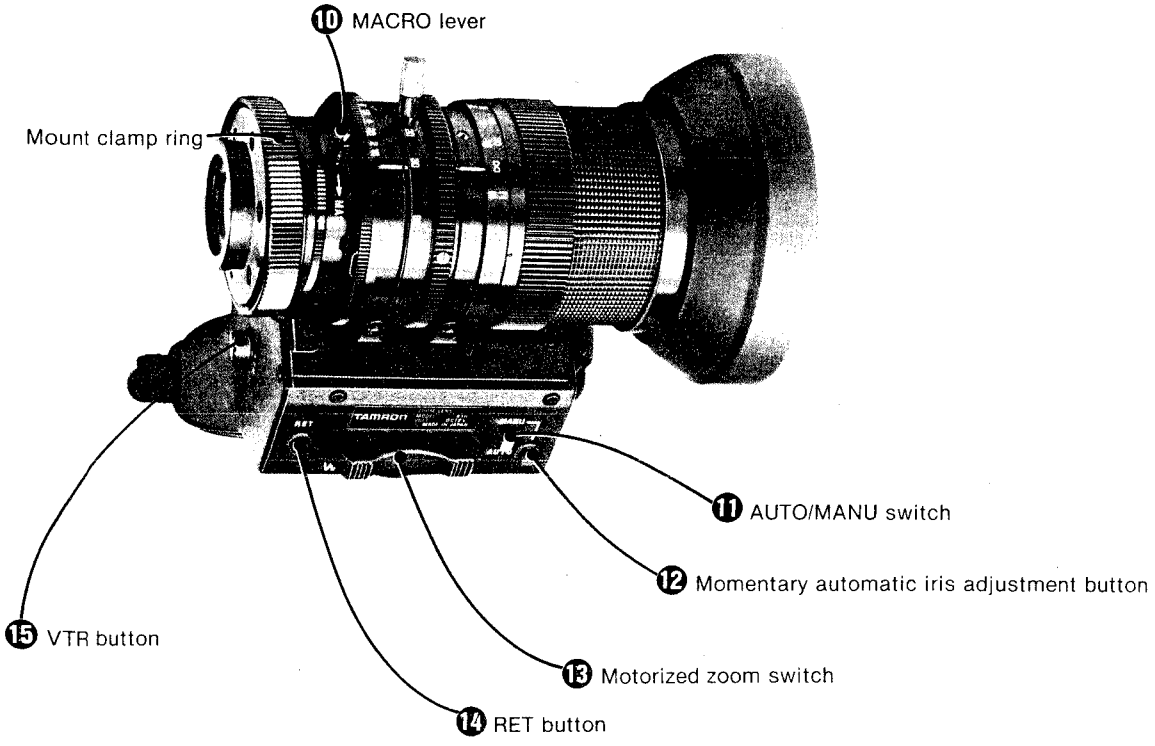
Caution
Be sure to set the VTR selector to the correct position for the VTR used, if it is not, the VTR might not operate properly.

㉓ EXT MIC (external microphone) jack (mini jack)
Connect an optional external microphone here. The built-in microphone is automatically cut off.

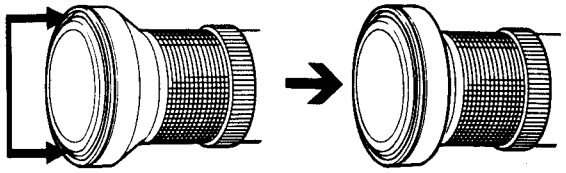
㉔ INTERCOM jack (mini intercom jack)
When more than two cameras are used, connect the DR-100 intercom headset (optional) here. It will then be possible to communicate between the camera and the connected CCU or a special-effects generator.

VCL-1010SY ZOOM LENS





❶ Lens hood
The lens hood can be folded down when attaching and detaching a lens filter.



❷ Focus ring
Turn this ring to focus.

❸ Manual zoom lever
For manual zooming, turn this lever with the MAN/SER switch set to MAN.

❹ Iris ring
For manual iris adjustment, turn this ring with the AUTO/MANU switch set to MANU.

❺ Ff (flange focal length) adjustment ring lock screws
Lock the Ff ring at the adjusted position.

❻ Ff (flange focal length) adjustment ring
Turn to adjust the flange focal length. See page 1-22 (a).

❼ Focus remote control connector
Connect the focus remote control unit (optional) for motorized focusing.

❽ REM (zoom remote control) connector (8-pin)
Connect the zoom remote control unit (optional) for remote control of zooming when the camera is attached to a tripod.

❾ MAN/SER (manual/auto) zoom selector switch
SER: For motorized zooming.
MAN: For manual zooming.

❿ MACRO (close-up) lever
For close-ups, pull the lever out and turn the ring as far as it will go toward "MACRO".

⓫ AUTO/MANU (auto/manual) iris adjustment selector switch
AUTO: For automatic iris adjustment.
MANU: For manual iris adjustment.

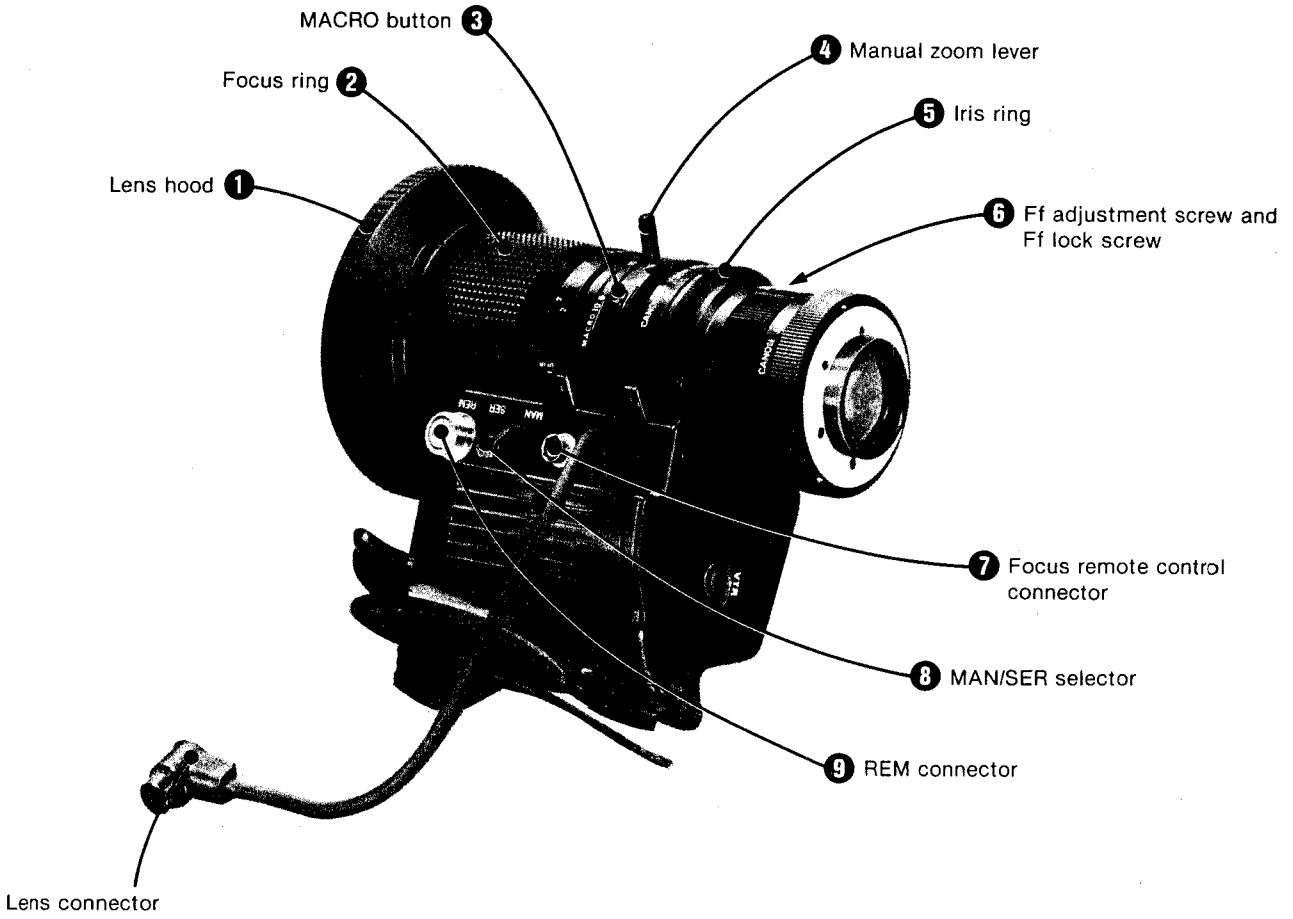
⓬ Momentary automatic iris adjustment button
The iris is automatically adjusted while this button is kept depressed, when the AUTO/MANU switch is set to MANU. When the button is released, the iris will be fixed at the value that has just been obtained by the automatic adjustment until the iris is again adjusted manually.

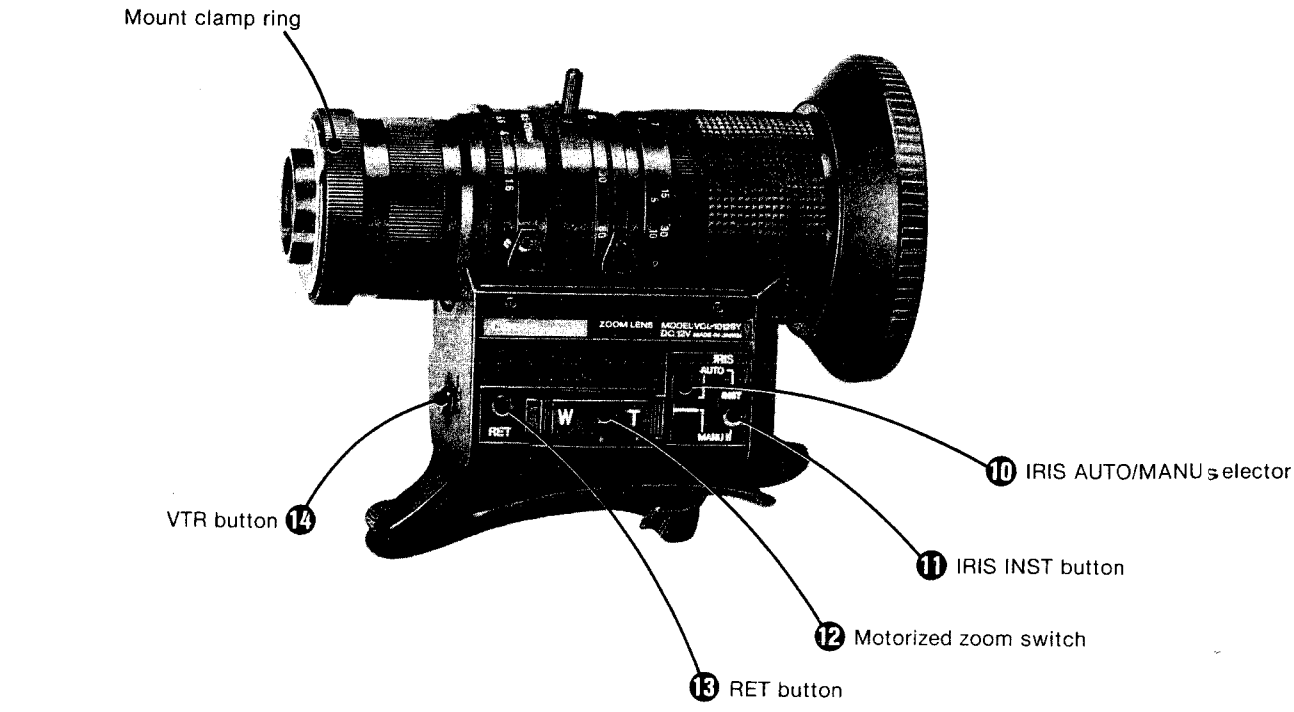
⓭ Motorized zoom switch
With the MAN/SER switch set to SER, press either end of this switch for motorized zooming: W for a wide-angle picture and T for a telephoto picture. Zooming is faster when the switch is pressed down all the way and slower when the switch is pressed down only slightly.

⓮ RET (return video) button
Press to view on the viewfinder screen the picture from the VTR during recording, the playback picture during playback, or the signal from the camera control unit (CCU).
This button has the same function as the VTR START/RETURN VIDEO switch of the camera (return video switch) when a CCU is connected.

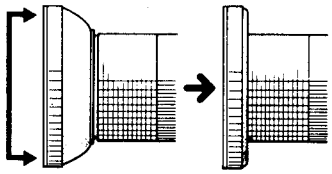
⓯ VTR button
When a portable VTR is connected to the camera, press this button to start and stop recording.
This button has the same function as the VTR START/RETURN VIDEO switch of the camera (start switch).

VCL-1012SY ZOOM LENS





❶ Lens hood
The lens hood can be folded down when attaching and detaching a lens filter. (The lens hood is threaded so that a lens filter is attached to it.) Be sure to fold down the lens hood when the camera is to be put in a Sony LC-1820 carrying case with this lens attached to it.



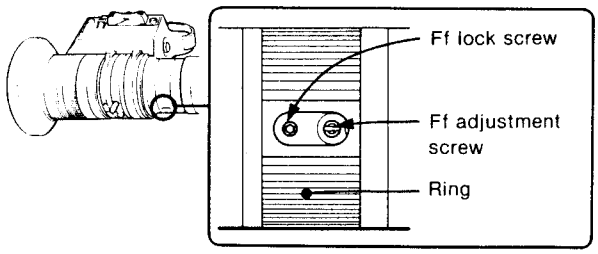
❷ Focus ring
Turn this ring to focus.

❸ MACRO (close-up) button
For close-ups, while holding the MACRO button down, turn the manual zoom lever beyond the "10.5" wide-angle position as far as it will go toward "MACRO".

❹ Manual zoom lever
For manual zooming, turn this lever with the MAN/SER selector set to MAN.

❺ Iris ring
For manual iris adjustment, turn this ring with the IRIS AUTO/MANU selector set to MANU.

❻ Ff (flange focal length) adjustment screw and Ff lock screw
Turn the Ff adjustment screw to adjust the flange focal length, then lock the zoom lens in place with the Ff lock screw. (See page 1-22(b).) After adjustment, turn the ring so that the screws are covered to prevent their being turned by accident.



❼ Focus remote control connector
This connector is used for motorized focusing.

❽ MAN/SER (manual/auto) zoom selector
SER: For motorized zooming.
MAN: For manual zooming.

❾ REM (zoom remote control) connector (8-pin)
Connect an LO-25 lens remote control unit (optional) for remote control of zooming when the camera is attached to a tripod.

❿ IRIS AUTO/MANU (auto/manual) adjustment selector
AUTO: For automatic iris adjustment.
MANU: For manual iris adjustment.

⓫ IRIS INST (momentary automatic iris) adjustment button
The iris is automatically adjusted while this button is kept depressed, when the IRIS AUTO/MANU selector is set to MANU. When the button is released, the iris will be fixed at the value that has just been obtained by the automatic adjustment until the iris is again adjusted manually.

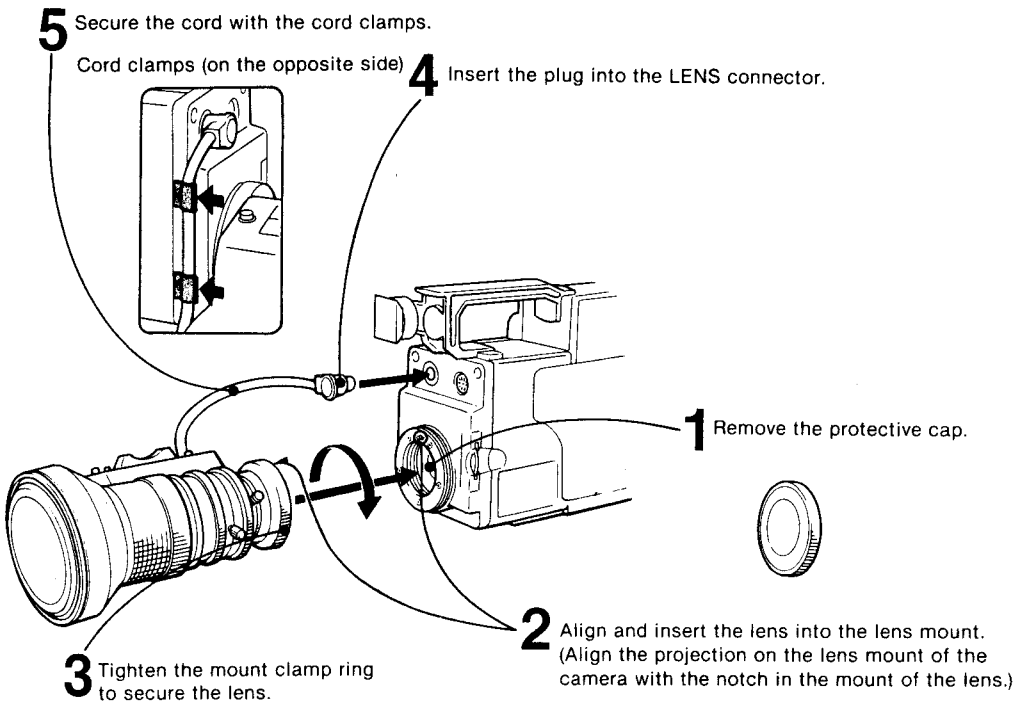
⓬ Motorized zoom switch
With the MAN/SER selector set to SER, press either end of this switch for motorized zooming: W for a wide-angle picture and T for a telephoto picture. Zooming is faster when the switch is pressed down all the way and slower when the switch is pressed down only slightly.

⓭ RET (return video) button
Press to view on the viewfinder screen the picture from the VTR during recording, the playback picture during playback, or the signal from the camera control unit (CCU).
This button has the same function as the VTR START/RETURN VIDEO switch of the camera (return video switch) when a CCU is connected.

⓮ VTR button
When a portable VTR is connected to the camera, press this button to start and stop recording.
This button has the same function as the VTR START/RETURN VIDEO switch of the camera (start switch).

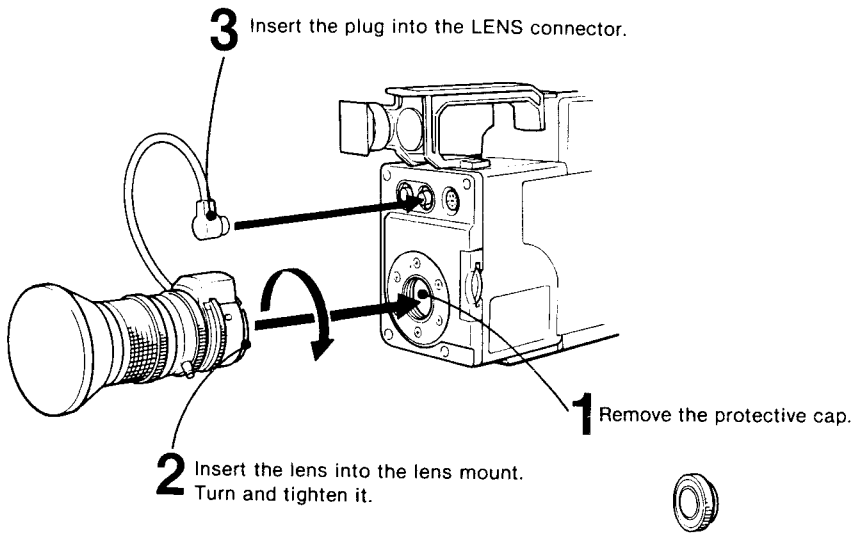
HOW TO ATTACH THE LENS TO THE CAMERA

DXC-1820


5 Secure the cord with the cord clamps.
Cord clamps (on the opposite side)
4 Insert the plug into the LENS connector.
1 Remove the protective cap.
2 Align and insert the lens into the lens mount. (Align the projection on the lens mount of the camera with the notch in the mount of the lens.)
3 Tighten the mount clamp ring to secure the lens.

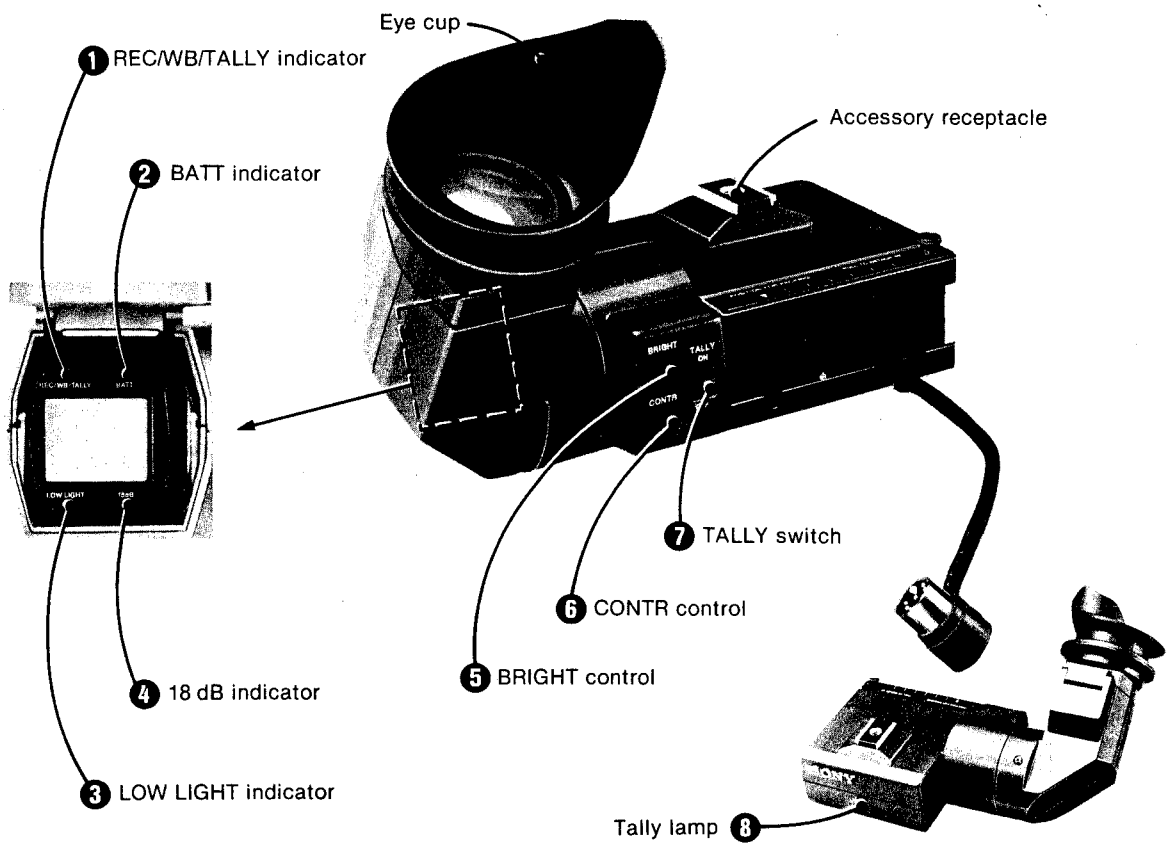
Note
The camera's lens mount is an S mount.

DXC-1821


3 Insert the plug into the LENS connector.
1 Remove the protective cap.
2 Insert the lens into the lens mount. Turn and tighten it.

Note
The camera's lens mount is a C mount. A C mount lens or an optical adaptor with a C mount can be attached to the camera.

DXF-1820 VIEWFINDER



❶ REC/WB/TALLY (record/white balance/tally) indicator
Illuminates during recording with a VTR connected to the camera, and illuminates when the camera's picture is selected by a control console, a special-effects generator, etc., connected to the camera control unit (CCU) which is connected to the camera.
During automatic white balance adjustment, the indicator illuminates when the automatic white balance adjustment has been completed, and then goes off after a few seconds. The indicator blinks in accordance with the warning system of the VTR.

❷ BATT (battery) indicator
Starts blinking several minutes before the battery of the camera, VTR or CCU is discharged to a level at which it cannot power the camera, VTR or CCU (about 11 V), and illuminates steadily when the battery has discharged to that level.

❸ LOW LIGHT indicator
Illuminates when the video output level from the camera is too low because of insufficient lighting. (Even if the indicator is illuminated, the camera will operate, but the recording will be at a low video level.)

❹ 18 dB indicator
Illuminates when the GAIN selector of the camera is set to 18 dB.

❺ BRIGHT (brightness) control
Adjusts the brightness of the picture on the viewfinder screen. To obtain a brighter picture, turn this control clockwise.

Note: This control does not affect the output signal of the camera.

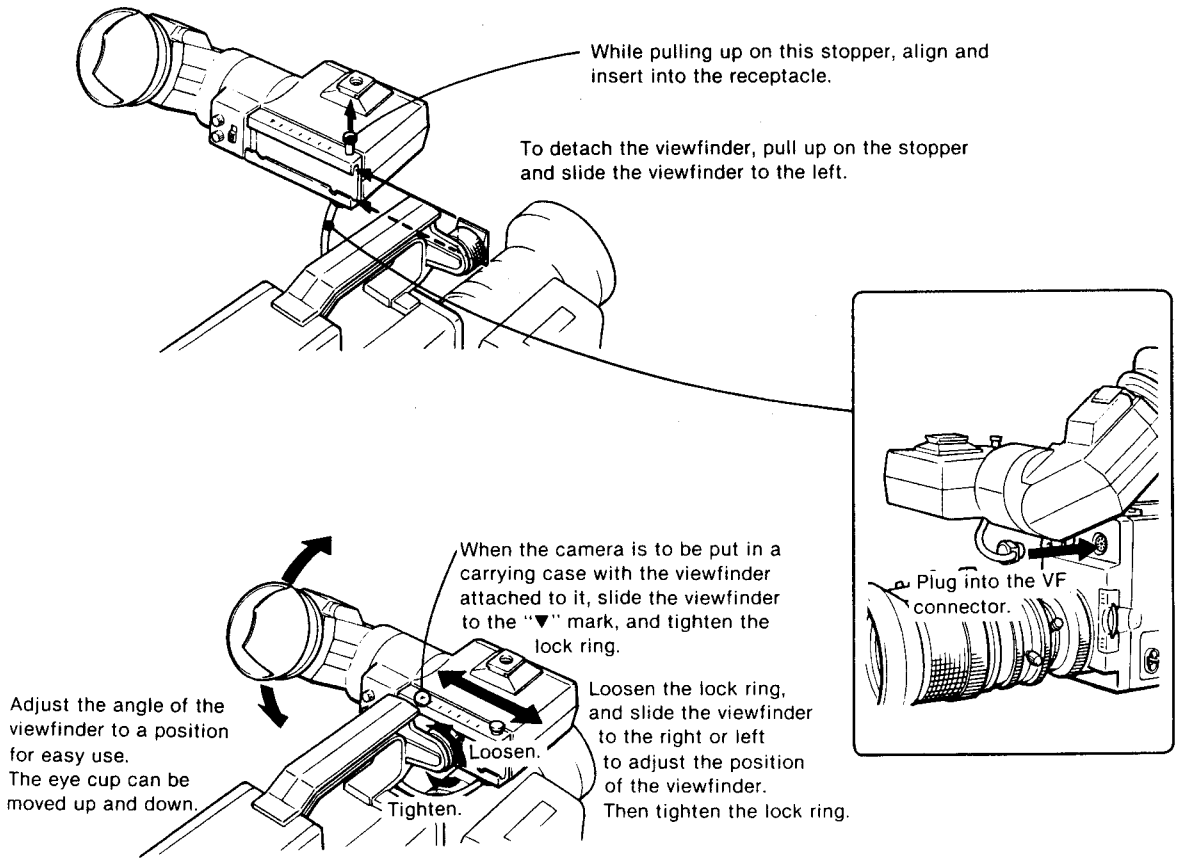
❻ CONTR (contrast) control
Adjusts the contrast of the picture on the viewfinder screen.

Note: This control does not affect the output signal of the camera.

❼ TALLY switch
The tally lamp ❽ can be turned on and off, if necessary, by setting this switch to ON or OFF.

❽ Tally lamp
When the TALLY switch ❼ is set to ON, this lamp operates the same as the REC/WB/TALLY indicator ❶

HOW TO ATTACH THE VIEWFINDER

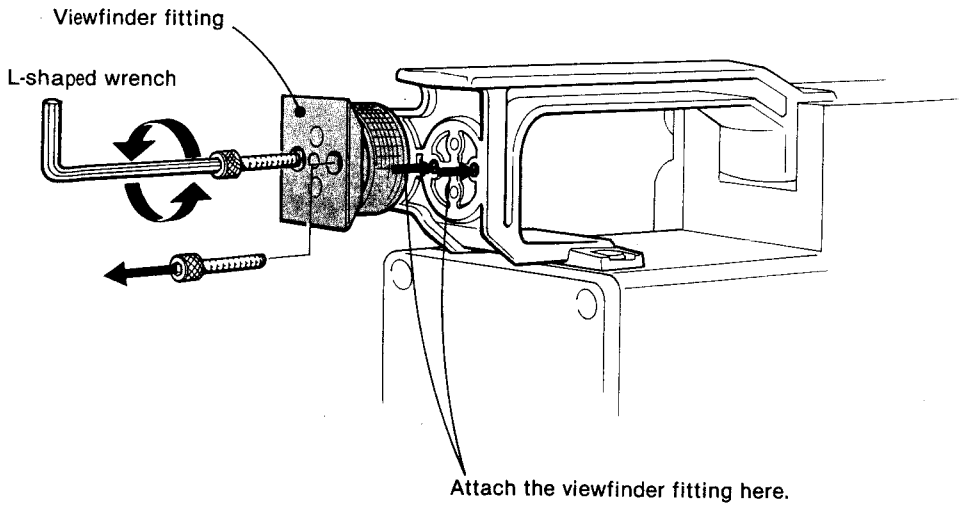

While pulling up on this stopper, align and insert into the receptacle.
To detach the viewfinder, pull up on the stopper and slide the viewfinder to the left.
Plug into the VF connector.
When the camera is to be put in a carrying case with the viewfinder attached to it, slide the viewfinder to the "▼" mark, and tighten the lock ring.
Adjust the angle of the viewfinder to a position for easy use.
The eye cup can be moved up and down.
Loosen.
Tighten.
Loosen the lock ring, and slide the viewfinder to the right or left to adjust the position of the viewfinder.
Then tighten the lock ring.

How to use the viewfinder with the left eye

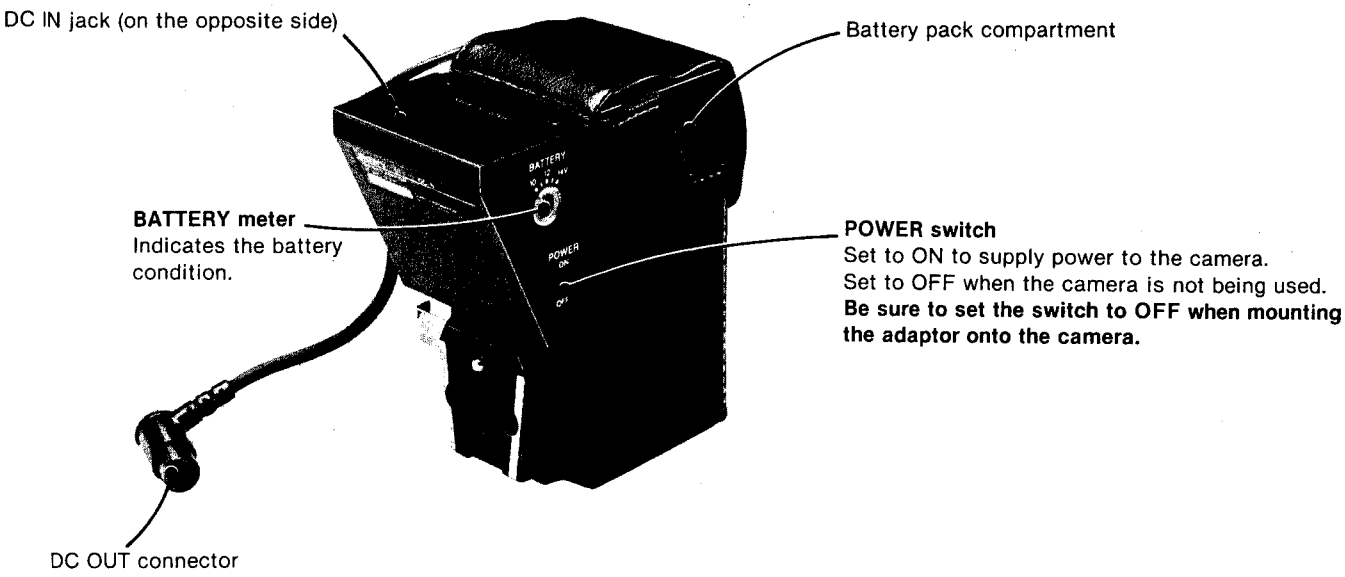
If you wish to use the viewfinder with your left eye, change the position of the viewfinder fitting on the front of the carrying handle of the camera as shown.

Note

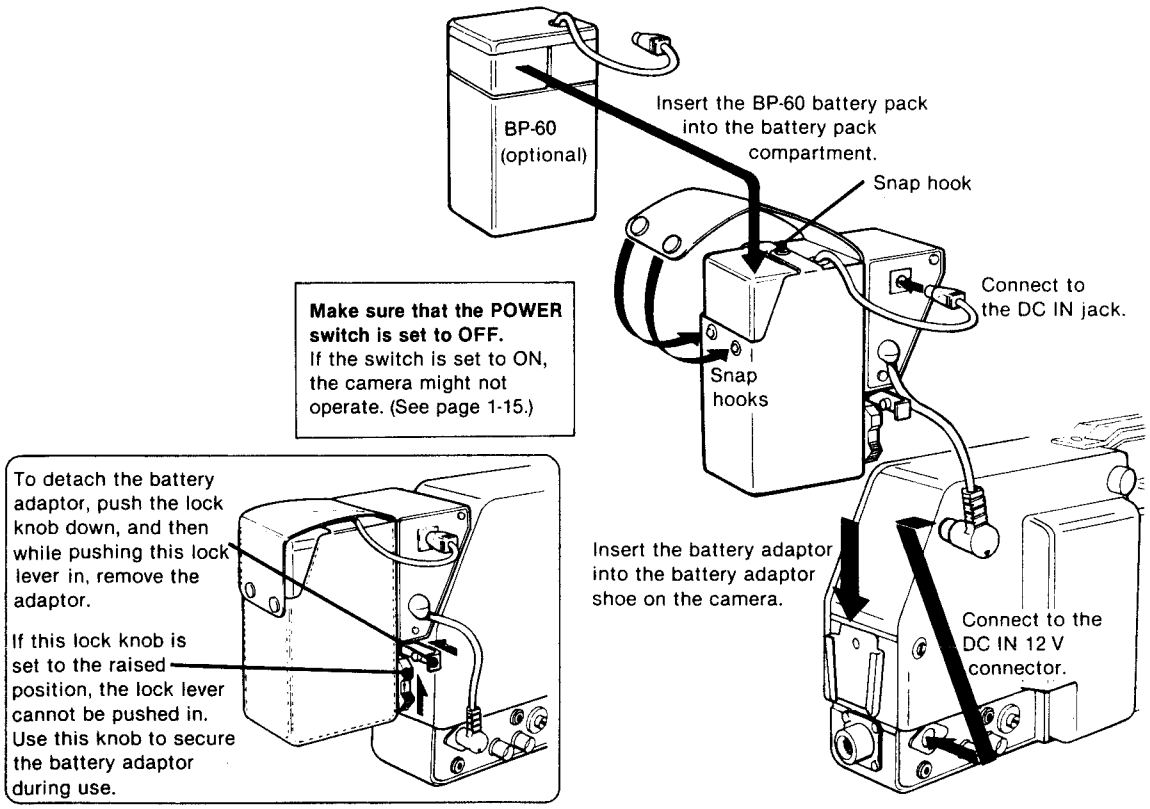
If the viewfinder fitting is attached to the position for left eye use, be sure that the viewfinder is detached before placing the camera inside a carrying case.



DC-6 BATTERY ADAPTOR


DC IN jack (on the opposite side)
Battery pack compartment
BATTERY meter
Indicates the battery condition.
POWER switch
Set to ON to supply power to the camera.
Set to OFF when the camera is not being used.
Be sure to set the switch to OFF when mounting the adaptor onto the camera.
DC OUT connector

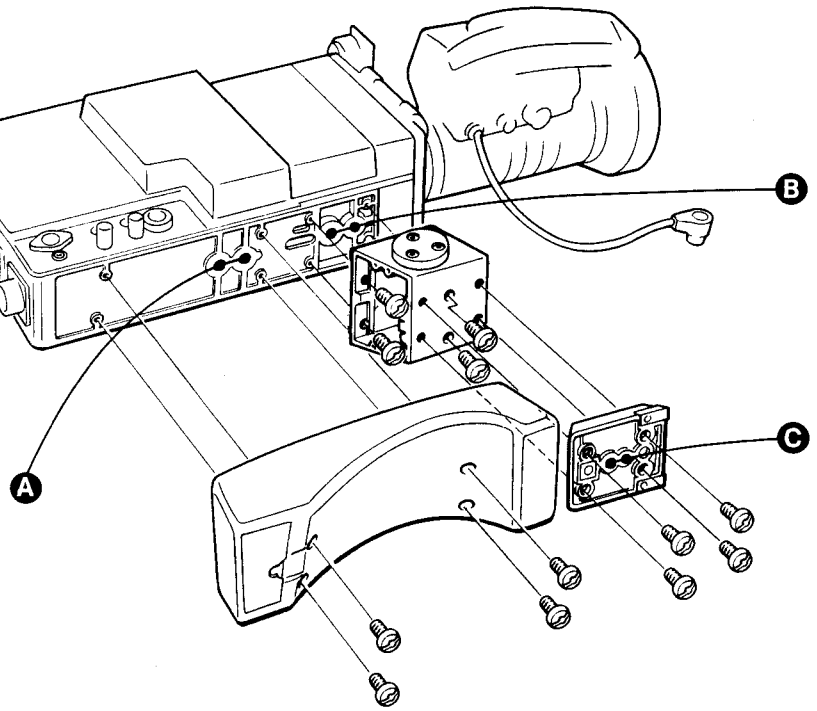
HOW TO ATTACH THE BATTERY ADAPTOR TO THE CAMERA


BP-60
(optional)
Insert the BP-60 battery pack into the battery pack compartment.
Snap hook
Connect to the DC IN jack.
Snap hooks
Make sure that the POWER switch is set to OFF.
If the switch is set to ON, the camera might not operate. (See page 1-15.)
To detach the battery adaptor, push the lock knob down, and then while pushing this lock lever in, remove the adaptor.
If this lock knob is set to the raised position, the lock lever cannot be pushed in. Use this knob to secure the battery adaptor during use.
Insert the battery adaptor into the battery adaptor shoe on the camera.
Connect to the DC IN 12 V connector.

VCT-1820 SHOULDER PAD

How to attach the camera to a tripod

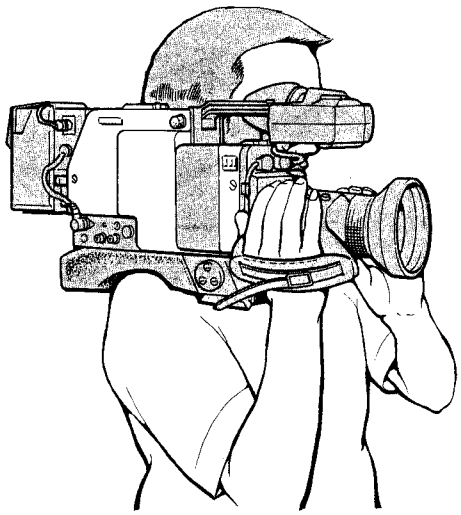
The VCT-1820 shoulder pad has been attached to the DXC-1820 camera at the factory. An optional VCT-12 tripod attachment allows the camera to be attached to and detached from a tripod simply and easily. When a large viewfinder (such as a DXF-40 or DXF-50) is not installed on the camera, the tripod can be attached, without using the VCT-12, to either of the tripod receptacles Ⓒ shown below. When a large viewfinder is installed on the camera and the VCT-12 is not used, or when the camera is to be used only in a studio, detach the shoulder pad as shown and directly attach the tripod to either of the tripod receptacles Ⓐ or Ⓑ on the bottom of the camera.



Notes

- Each set of tripod receptacles consists of a large one (U 3/8" - 16 UNC) and a small one (U1/4" - 20 UNC). Use whichever receptacle fits the screw of the tripod and balances the camera.
- A VCT-8 brace (optional) can be attached to the DXC-1821 camera.

How to hold the camera on your shoulder

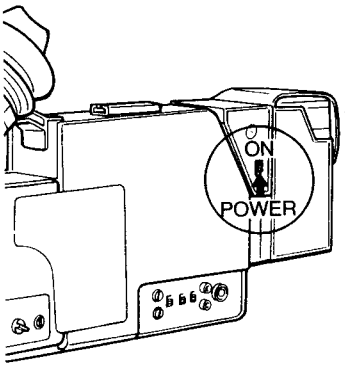


1-5. POWER SOURCES

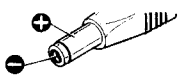
The camera operates on any one of the following four power sources:
— BP-60 battery pack, using the DC-6 battery adaptor
— Power from the portable VTR
— Power from the CCU-1800 camera control unit
— AC power, using the CMA-7 ac power adaptor

BATTERY PACK

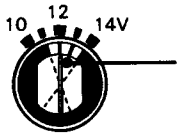
Use the BP-60 battery pack (optional) when recording outdoors.
Attach the DC-6 battery adaptor, in which the BP-60 battery pack is installed, to the camera (see page 1-13), and set the POWER switch of the battery adaptor to ON. The camera will now operate on battery.



● Be sure to set the POWER switch to OFF when recording is finished.
● Remove the battery adaptor from the camera when the battery is not being used. When the battery adaptor is connected to the DC IN 12V connector, the camera will not operate on any other power source.
● Do not use any battery pack other than that manufactured by Sony. Polarity of the battery plug of other battery packs may differ.



Battery life
A fully-charged battery allows about 1 hour and 30 minutes of continuous operation of the camera, the DXF-1820 viewfinder and the VCL-1010SY zoom lens at normal temperatures.
The pointer of the BATTERY meter on the battery adaptor indicates the battery condition when the POWER switch on the adaptor is set to ON. A white-scale reading indicates that the battery is in good condition; a red-scale reading indicates that the battery is exhausted.



When the battery is exhausted, the pointer of the battery meter swings to the red zone, and the power to the camera will be switched off automatically to avoid over-discharging of the battery (auto shut-off).
When this happens, set the POWER switch on the adaptor to OFF and install a charged battery pack.
The BATT indicator on the viewfinder also indicates that the battery is exhausted. For details, refer to "WARNING INDICATORS" on page 1-28.

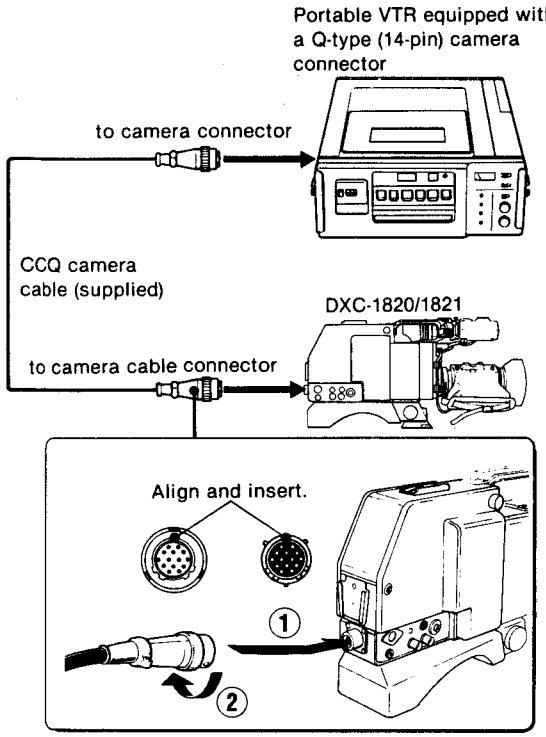
Notes
● Be sure to set the POWER switch to OFF when replacing the exhausted battery with a charged one. If the camera does not operate when a new battery is installed, set the POWER switch to OFF, and then set it to ON again.
● The operating life of the battery will be shortened when it is very cold or when the battery is used until it is exhausted. When the operating period of a recharged battery is less than the half the normal operating life at normal temperatures, the battery should be changed.

Battery charging
Charge the battery immediately after use, using the BC-1000 or BC-20 battery charger. Do not permit the battery to remain discharged.
The battery can also be charged with the ac power adaptor supplied with a portable VTR.
Refer to the instruction manual supplied with the battery charger for details on recharging.

● When the battery pack is not used for a long time, be sure to recharge it every six months.
● When very heavily discharged batteries are put on charge, the charging lamp of the battery charger will not light, giving an erroneous "full-charge" indication. Should this occur, allow several hours, or even several days, to reach a charging condition, as indicated by the charging lamp. If the batteries still cannot be recharged, replace them with new batteries.

POWER FROM THE PORTABLE VTR

To power the camera with the battery installed in a portable VTR, connect the camera to a portable VTR using the CCQ camera cable (supplied) as illustrated. Power will be supplied from the VTR through the camera cable.



Notes

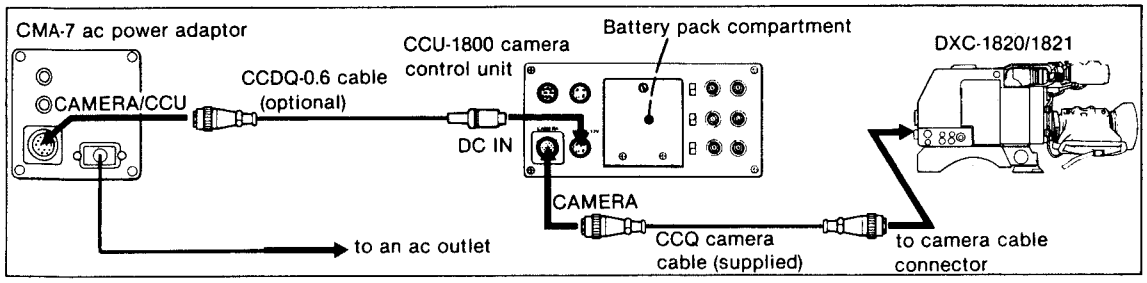
- The continuous operating time of the camera and portable VTR is about 40 minutes at normal temperatures (when the VO-4800 portable videocassette recorder and the BP-60 battery pack are used). The life of the battery installed in the portable VTR is indicated by the BATT indicator of the viewfinder.
- When the VO-4800 portable videocassette recorder operates with the AC-340B ac power adaptor supplied with the VO-4800, power is supplied to the camera through the VTR.
- Refer to the instruction manual supplied with the VTR for information on the power supply to the VTR.

Caution

- Before operation, make sure that the power supplied from the VTR to the camera is sufficient for the proper operation of the camera. If the camera is not powered by the VTR used, it must be powered by a battery pack, using the DC-6 battery adaptor.
- When a portable VTR equipped with a K-type (14-pin) camera connector is used, a DC-6 battery adaptor in which a battery pack is installed must be attached to the camera, because the power is not supplied through the CCQK cable.

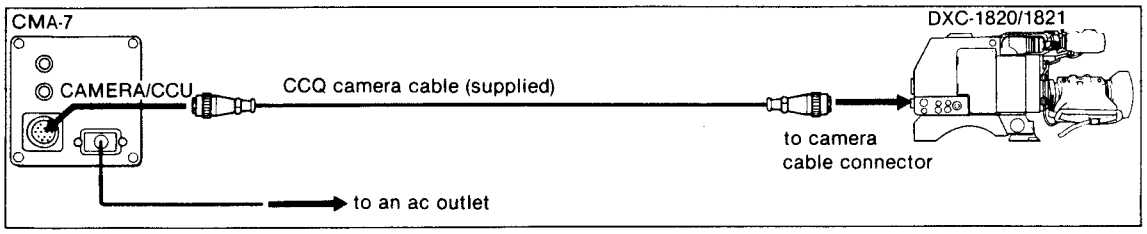
POWER FROM THE CAMERA CONTROL UNIT

Connect the camera and the CCU-1800 camera control unit using the CCQ camera cable (supplied) as illustrated, and set the POWER switch of the CCU to ON. Power will then be supplied from the CCU through the camera cable.
For details on the power sources for the CCU, refer to the instruction manual supplied with the CCU.



AC POWER

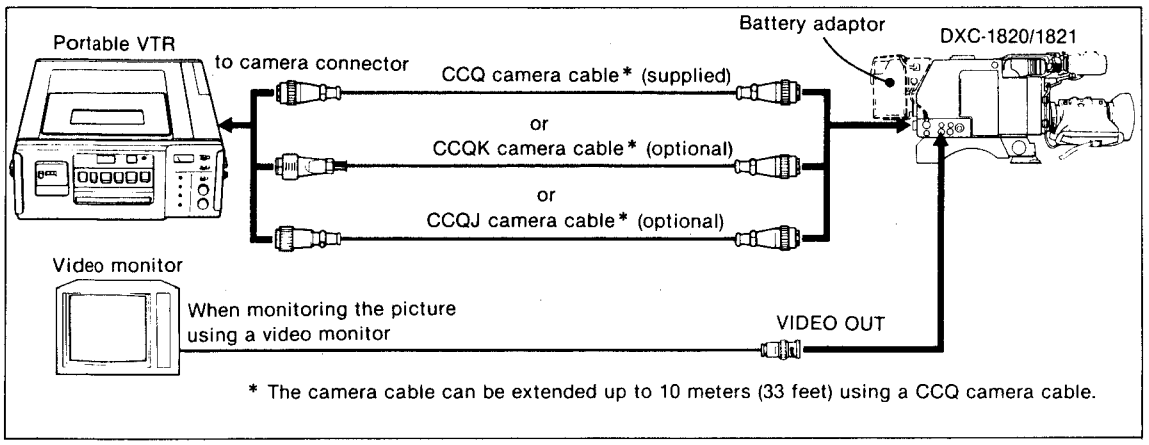
The camera can be operated from an ac power supply using the CMA-7 ac power adaptor (optional). Connect the camera and the CMA-7, as illustrated, using the supplied CCQ camera cable, and set the POWER switch of the CMA-7 to ON.



1-6. CONNECTIONS

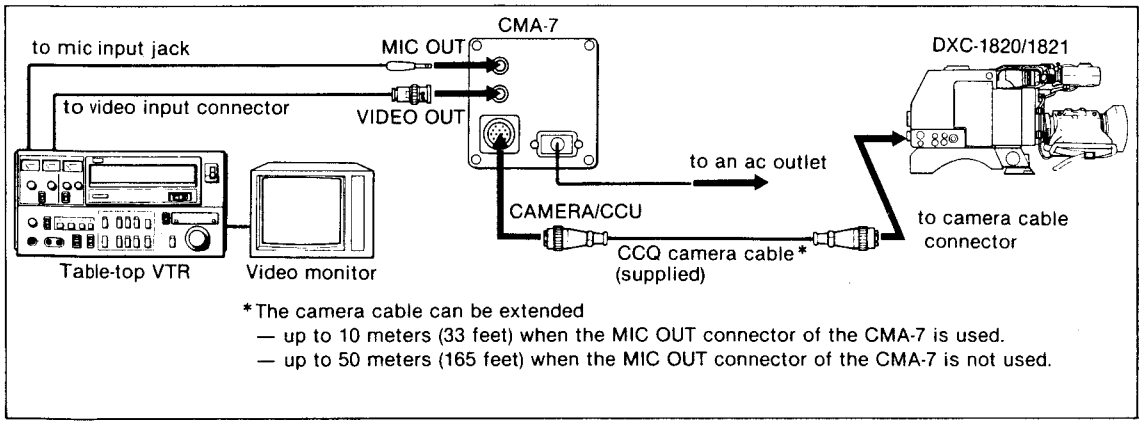
Before making connections, make sure that the power switches of the camera and other equipment are turned OFF.

CONNECTION WITH A PORTABLE VTR

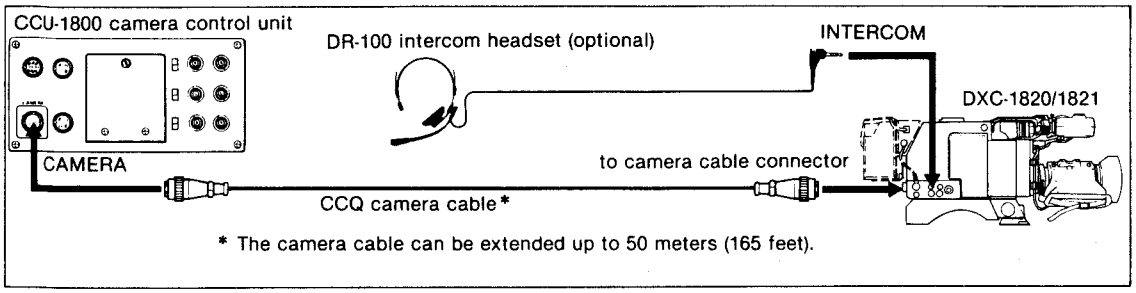

Portable VTR
to camera connector
CCQ camera cable* (supplied)
or
CCQK camera cable* (optional)
or
CCQJ camera cable* (optional)
Battery adaptor
DXC-1820/1821
Video monitor
When monitoring the picture using a video monitor
VIDEO OUT
* The camera cable can be extended up to 10 meters (33 feet) using a CCQ camera cable.

Note
Set the VTR selector to the appropriate position, depending on the type of VTR being used. (See pages 1-7 and 1-20.)

CONNECTION WITH A TABLE-TOP VTR


CMA-7
to mic input jack
MIC OUT
to video input connector
VIDEO OUT
DXC-1820/1821
to an ac outlet
CAMERA/CCU
to camera cable connector
CCQ camera cable* (supplied)
Table-top VTR
Video monitor
*The camera cable can be extended
— up to 10 meters (33 feet) when the MIC OUT connector of the CMA-7 is used.
— up to 50 meters (165 feet) when the MIC OUT connector of the CMA-7 is not used.

CONNECTION WITH A CAMERA CONTROL UNIT



Notes on operation with the CCU-1800

- Set the VTR selector of the camera to "1".
- When the camera is connected to the CCU, the following switches will not operate: GAIN selector, BARS/CAMERA selector, SC PHASE COARSE selector, SC PHASE FINE control and H PHASE control.
- Since the CCU is not equipped with an audio output, the audio signal picked up by the built-in or external microphone on the camera cannot be delivered through the CCU. To record sound with the camera picture, another microphone and a mixer must be used.
- The CCU cannot raise the video output level by 18 dB because the GAIN selector of the CCU does not have the "18 dB" position. It is not possible to control the NEGA/POSI selector of the camera from the CCU since the CCU is not equipped with the negative/positive reverse function.
- The ABL switch of the CCU does not operate with this camera.

SETTING OF THE VTR SELECTOR

VTR selector	Microphone level	Connected VTR	Remote control of VTR start/stop	Start/stop signal level of camera to VTR	REC indicator		Signal level of REC indicator VTR to camera)	BATT alarm indication	Audio monitor (on the camera)	Picture shown on the viewfinder		Cable for connection n: cable length	Power supply from VTR to camera (See note 1.)	AC power adaptor for VTR
					REC Indication	VTR alarm				During recording	During playback			
1	−60 dB	VO-4800	Yes		Yes	Yes	H M L	Yes	Yes	Yes Camera	Yes VTR	CCQ-nAR	Yes	CMA-7 (See note 2.)
		BVU-50	Yes	H L	Yes	Yes	H: +5V M: +2.5V L: 0V	Yes	Yes	Yes Camera	No	CCQ-nAR	Yes	AC-500
		BVU-110	Yes	H: +5V, RUN L: 0V, STOP	Yes	Yes	REC indicator lights up at H.	Yes	Yes	Yes Camera	Yes VTR	CCQ-nAR	Yes	AC-500
		SLO-340	Yes		Yes	No	H L H: VTR power L: 0V	No	Yes	Yes Camera (See note 3.)	Yes VTR	CCQJ-2	Yes	CMA-7
2	−20 dB	SL-2000	Yes	+9V 0V Run/stop each time the START/STOP switch is pressed.	Yes	Yes	H L H: +5V L: 0V REC indicator lights up at H.	No	Yes	Yes Camera	Yes VTR	CCQK-2	No	AC-220
3	−20 dB	HR-C3 (JVC)	Yes	H L H: VTR power, STOP L: 0V, RUN	Yes	No	VTR power	No	Yes	Yes Camera	Yes VTR	CCQJ-2	No	
4	−20 dB	PV-5000 (Panasonic)	Yes	H L H: VTR power, RUN L: 0V, STOP	Yes	No	VTR power	No	No	Yes Camera	Yes VTR	CCQJ-2	No	

Notes

1. For VTRs with "No" in this column, the power supply capacity from the VTR is insufficient to operate the camera. For this reason, the DC-6 battery adaptor (and the battery pack) must be installed onto the camera. If the camera is operated without the battery adaptor, heat will build up in the VTR or ac power adaptor and the protection circuit will activate.

2. The CMA-7 ac power adaptor must be used for the VO-4800 because the power supply capacity of the AC-340B ac power adaptor is insufficient to operate the camera.

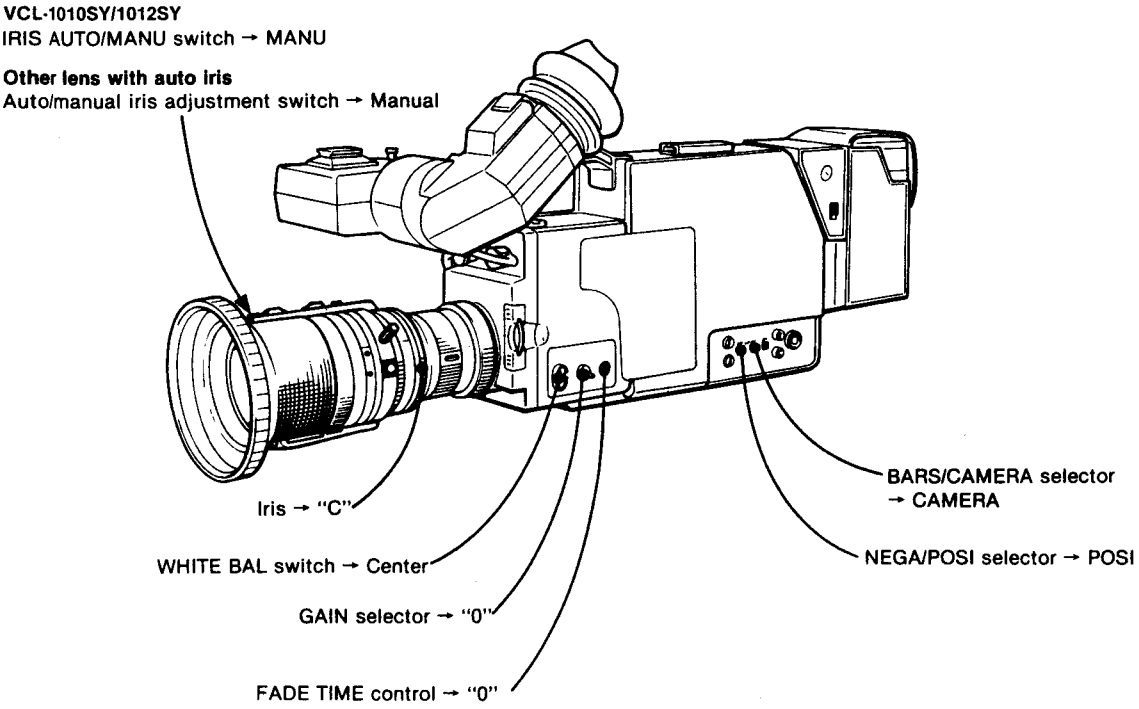
3. When the DC-6 battery adaptor is installed on the camera, the picture from the VTR is viewed in the viewfinder.

If the operating conditions of the VTR are different from those shown above, the VTR might not operate normally. If you use a VTR other than those shown above, for which the VTR selector must be set to "3" or "4", check the signal levels and other operating conditions.

1-7. ADJUSTMENTS

PREPARATION

Check to make sure that the connections have been made correctly (see pages 1-18 and 1-19) and set the switches as shown.


VCL-1010SY/1012SY
IRIS AUTO/MANU switch → MANU
Other lens with auto iris
Auto/manual iris adjustment switch → Manual
Iris → "C"
WHITE BAL switch → Center
GAIN selector → "0"
FADE TIME control → "0"
BARS/CAMERA selector → CAMERA
NEGA/POSI selector → POSI

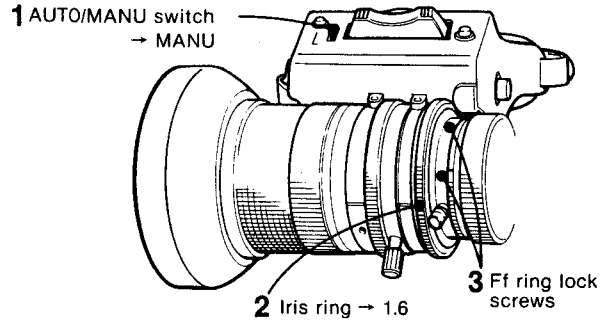
Caution
To protect the pickup tube, avoid letting light enter the pickup tube before turning on the camera.

1 Turn on the power of the power supply unit. (Refer to "POWER SOURCES" on pages 1-15 to 1-17.)
The viewfinder screen will brighten after a few seconds. If it does not, turn the BRIGHT control of the viewfinder clockwise.
2 After waiting 15 seconds, remove the lens cap and point the camera at the object to be shot.
3 Set the auto/manual iris adjustment switch of the lens (AUTO/MANU switch of the VCL-1010SY/1012SY) to AUTO.
4 While zooming in or out, turn the focus ring to focus the picture.

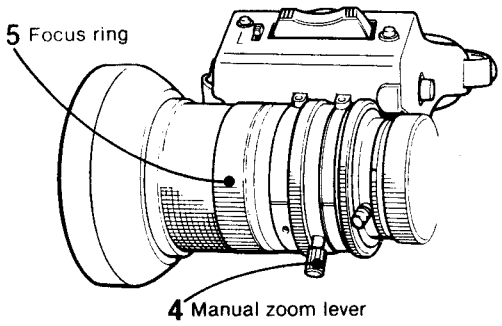
FLANGE FOCAL LENGTH ADJUSTMENT (VCL-1010SY)

The proper flange focal length adjustment insures that the object is in focus both at the wide-angle position and at the telephoto position when zooming.

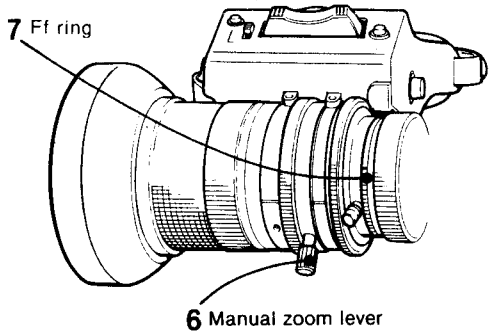
1 Set the AUTO/MANU switch to MANU.
2 Set the iris ring to "1.6".
Position an appropriate object and illuminate it so that the proper video level is obtained when the iris ring is set to "1.6".
3 Loosen the Ff ring lock screws.



4 Set the MAN/SER switch to MAN and turn the manual zoom lever to the "105" telephoto position.
5 Turn the focus ring until an object at about three meters (10 feet) from the lens is in focus. An object with fine detail is desirable.



6 Turn the manual zoom lever to the "10.5" wide-angle position.
7 Turn the Ff ring until the same object is in focus.
Be sure not to turn the focus ring.

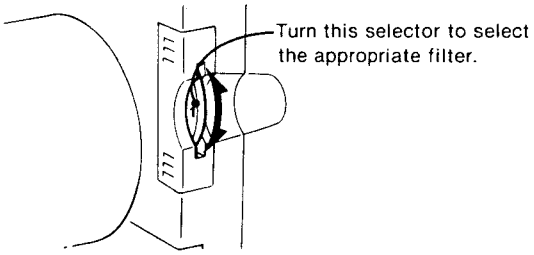


8 Repeat steps 4 through 7 until the object is in focus both at the telephoto position and at the wide-angle position.
9 Tighten the Ff ring lock screws.
Once the flange focal length adjustment has been made, readjustment is not necessary as long as the lens stays mounted on the same camera.

SELECTION OF A FILTER

The color temperature varies with changes in the lighting conditions. To compensate for changes in the color temperature, use the color temperature conversion filter indicated in the table below.

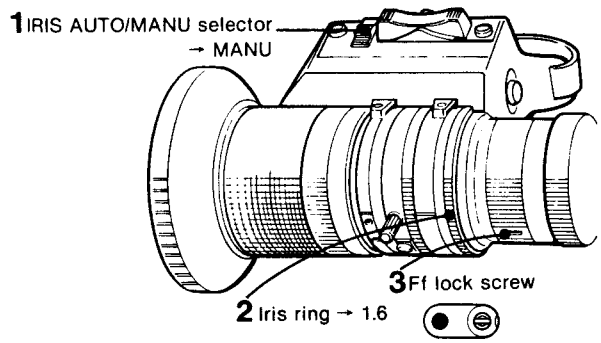
Filter number	Lighting conditions
1	Iodine lamp, sunrise, sunset
2	Bright outdoor
3	Cloudy, rainy
4	White fluorescent light



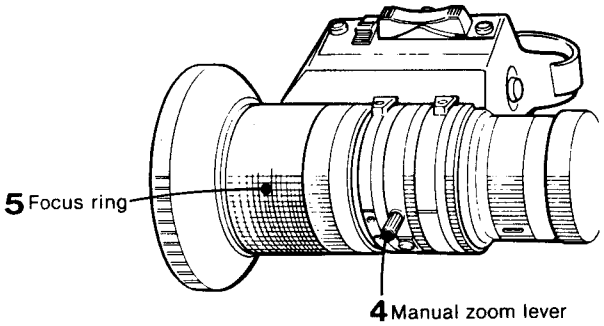
FLANGE FOCAL LENGTH ADJUSTMENT (VCL-1012SY)

The proper flange focal length adjustment insures that the object is in focus both at the wide-angle position and at the telephoto position when zooming.

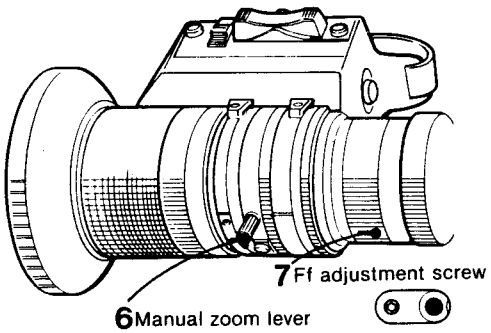
1 Set the IRIS AUTO/MANU switch to MANU.
2 Set the iris ring to "1.6".
Position an appropriate object and illuminate it so that the proper video level is obtained when the iris ring is set to "1.6".
3 Loosen the Ff lock screw. If the screw is covered with the ring, turn the ring so that the screw appears at the opening in the ring.



4 Set the MAN/SER switch to MAN and turn the manual zoom lever to the "126" telephoto position.
5 Turn the focus ring until an object at about three meters (10 feet) from the lens is in focus. An object with fine detail is desirable.



6 Turn the manual zoom lever to the "10.5" wide-angle position.
7 Turn the Ff adjustment screw until the same object is in focus. Be sure not to turn the focus ring.

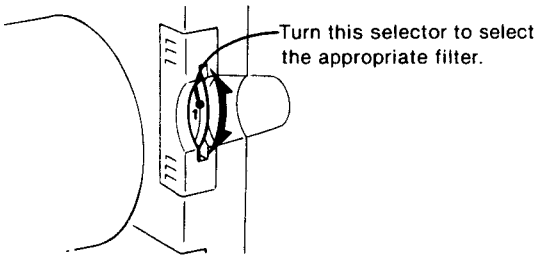


8 Repeat steps 4 through 7 until the object is in focus both at the telephoto position and at the wide-angle position.
9 Tighten the Ff lock screw.
Once the flange focal length adjustment has been made, readjustment is not necessary as long as the lens stays mounted on the same camera. We recommend, therefore, that the ring be turned so that the Ff adjustment and lock screws are covered with the ring.

SELECTION OF A FILTER

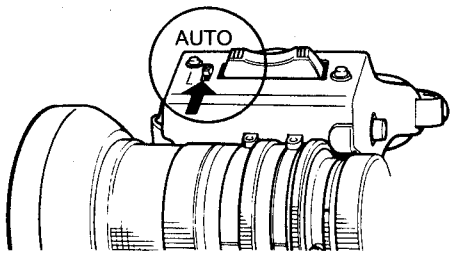
The color temperature varies with changes in the lighting conditions. To compensate for changes in the color temperature, use the color temperature conversion filter indicated in the table below.

Filter number	Lighting conditions
1	Iodine lamp, sunrise, sunset
2	Bright outdoor
3	Cloudy, rainy
4	White fluorescent light

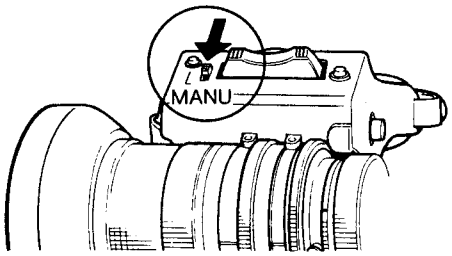


IRIS ADJUSTMENT (VCL-1010SY)

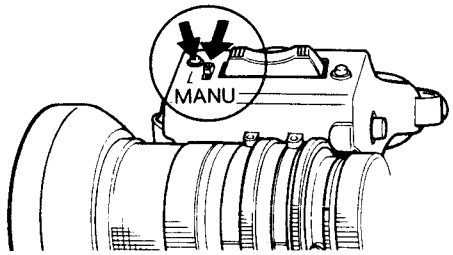
Automatic adjustment
Set the AUTO/MANU switch to AUTO, and the iris will be automatically adjusted to the brightness of the object. Normally use the AUTO position.



Manual adjustment
Set the AUTO/MANU switch to MANU, and turn the iris ring. Manual adjustment may be effective when recording an object against a bright sky or a scene with high contrast.



Temporary automatic adjustment
While the momentary automatic iris adjustment button is kept depressed during manual iris adjustment, the iris is automatically adjusted. When the button is released, the iris will be fixed at the value that has just been obtained by automatic adjustment until the iris is adjusted again manually.



Simple guide for outdoor use
The optimum iris may vary with the type of object, scene, etc.
The following table is only a general guideline. When part of the picture is saturated, stop down the lens.

Lighting conditions	Iris (F number)
Bright outdoors in spring and summer	8
Very bright seaside in summer	8 - 16
Spring and summer shade	5.6
Fall and winter sunshine	5.6
Thin cloud	5.6
Cloudy	2.8
Rainy	2 - 1.4

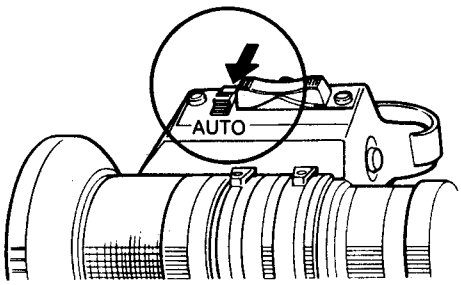
When the illumination of the object is known

Brightness of the object (lux)	Iris (F number)	
	With filter 1 or 4	With filter 2 or 3
1,000 or less	1.6	1.6
2,000	4	2.8
4,000	5.6	4
8,000	8	5.6
16,000	11	8
32,000	16	11
64,000	22	16
128,000 or more	22	22

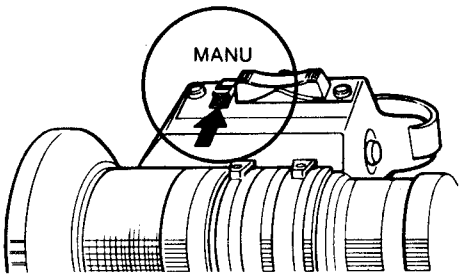
When color temperature conversion filter 2 or 3 is used, the amount of light that enters the pickup tube will be reduced to about one half of the normal level. In these cases, the iris is opened one additional stop, as shown above.

IRIS ADJUSTMENT (VCL-1012SY)

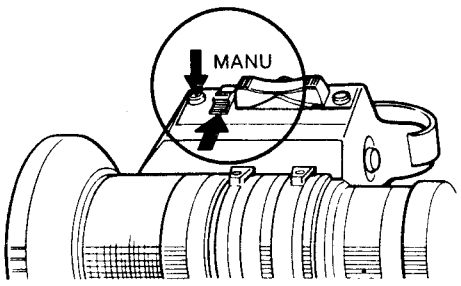
Automatic adjustment
Set the IRIS AUTO/MANU switch to AUTO, and the iris will be automatically adjusted to the brightness of the object. Normally use the AUTO position.



Manual adjustment
Set the IRIS AUTO/MANU switch to MANU, and turn the iris ring. Manual adjustment may be effective when recording an object against a bright sky or a scene with high contrast.



Temporary automatic adjustment
While the IRIS INST button is kept depressed during manual iris adjustment, the iris is automatically adjusted. When the button is released, the iris will be fixed at the value that has just been obtained by automatic adjustment until the iris is adjusted again manually.



Simple guide for outdoor use
The optimum iris may vary with the type of object, scene, etc.
The following table is only a general guideline. When part of the picture is saturated, stop down the lens.

Lighting conditions	Iris (F number)
Bright outdoors in spring and summer	8
Very bright seaside in summer	8 - 16
Spring and summer shade	5.6
Fall and winter sunshine	5.6
Thin cloud	5.6
Cloudy	2.8
Rainy	2 - 1.4

When the illumination of the object is known

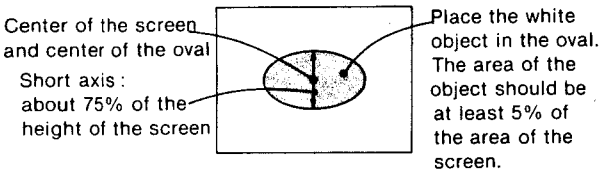
Brightness of the object (lux)	Iris (F number)	
	With filter 1 or 4	With filter 2 or 3
1,000 or less	1.6	1.6
2,000	4	2.8
4,000	5.6	4
8,000	8	5.6
16,000	11	8
32,000	16	11
64,000	22	16
128,000 or more	22	22

When color temperature conversion filter 2 or 3 is used, the amount of light that enters the pickup tube will be reduced to about one half of the normal level. In these cases, the iris is opened one additional stop, as shown above.

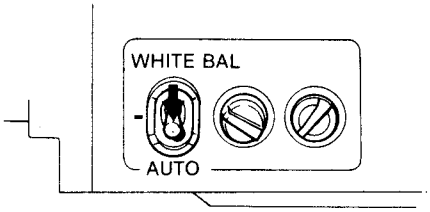
WHITE BALANCE ADJUSTMENT

The white balance should be correctly adjusted for lifelike color reproduction and a clear picture.

1 Set the color temperature conversion filter selector to the position corresponding to the light conditions.
2 Set the BARS/CAMERA selector to CAMERA.
3 Zoom up on a white object, such as a white cloth, white wall, etc., with the same lighting condition as that under which the recording will be made.
The minimum white area required for adjustment is as follows.


Center of the screen and center of the oval
Short axis : about 75% of the height of the screen
Place the white object in the oval. The area of the object should be at least 5% of the area of the screen.

4 When using the VCL-1010SY zoom lens or a lens with auto iris, set the AUTO/MANU switch (auto/manual iris adjustment switch) to AUTO.
When using a lens without auto iris, adjust the iris in accordance with the lighting condition.
5 Set the WHITE BAL switch to AUTO (lower position). The switch automatically returns to the center position when it is released.
After a few seconds, the white balance will be adjusted automatically, and the REC/WB/TALLY indicator of the viewfinder will illuminate. (The indicator will go off after a few seconds.)
If the REC/WB/TALLY indicator does not illuminate, zoom up on a white object which meets the requirements described in **3**, select the appropriate color temperature conversion filter and try the white balance adjustment again.



If you want to start recording without the need to adjust the white balance
Set the WHITE BAL switch to PRESET (upper position) and select the appropriate filter for the lighting condition. The approximate white balance (the factory preset value of 3200°K) is obtained.

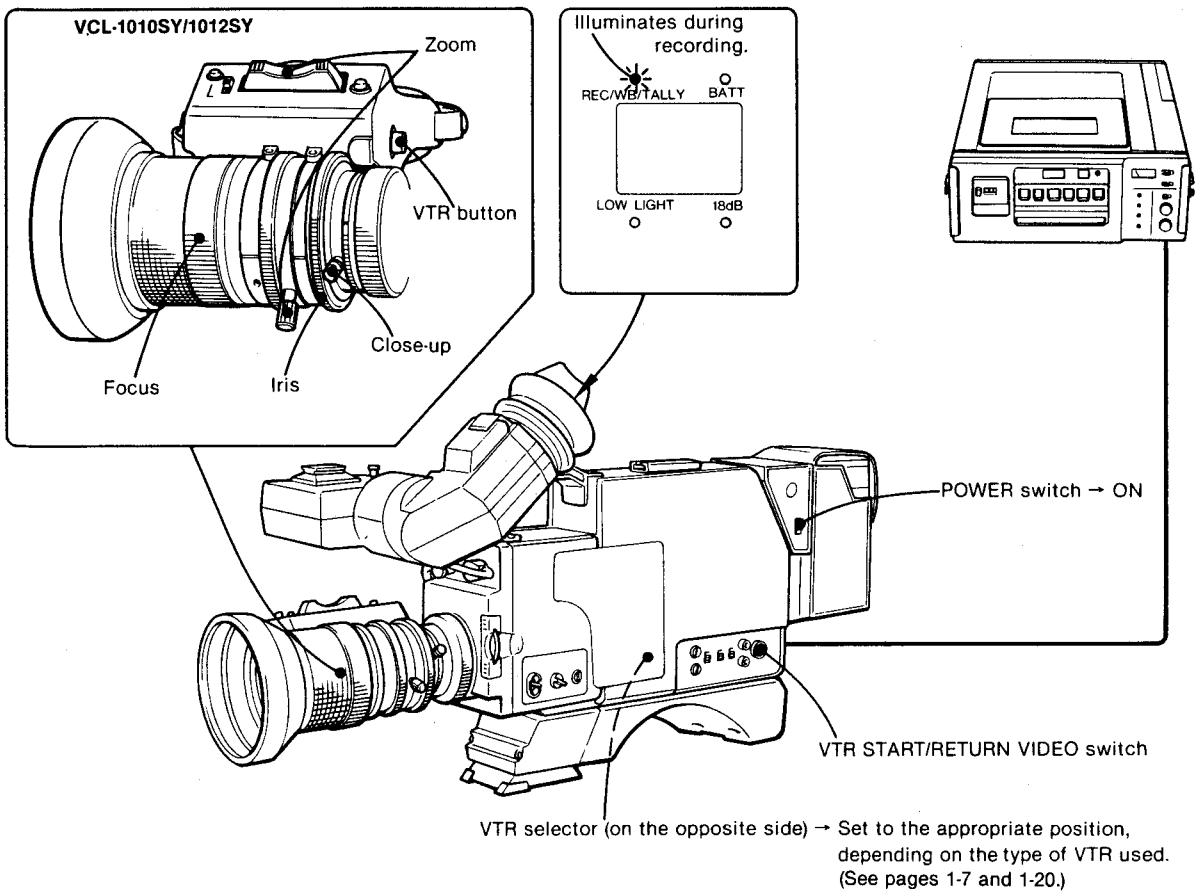
VIDEO MONITOR ADJUSTMENT

When a color video monitor is being used to monitor a picture, adjust the color of the monitor using the color bar signals supplied from the camera.

1 Set the BARS/CAMERA selector to BARS.
2 Adjust the color and hue controls on the monitor while viewing the color bars on the monitor screen.
3 Set the BARS/CAMERA selector to CAMERA.

1-8. OPERATION

RECORDING WITH A PORTABLE VTR



1 Turn the camera and the connected equipment on.

2 Set the VTR to the standby mode. (Refer to the instruction manual supplied with the VTR.)

Note
Set the BARS/CAMERA selector to BARS and adjust the contrast and brightness of the viewfinder, if necessary. Then return the selector to CAMERA.

3 Point the camera at the object and adjust the lens.
— Iris (Refer to page 1-23.)
— Zoom (Refer to page 1-27.)
— Close-up (Refer to page 1-27.)
— Focus

4 Press the VTR START/RETURN VIDEO switch on the camera or the VTR button on the lens to start recording. The REC/WB/TALLY indicator in the viewfinder will illuminate during recording.
To stop recording, press the VTR START/RETURN VIDEO switch or the VTR button on the lens again.

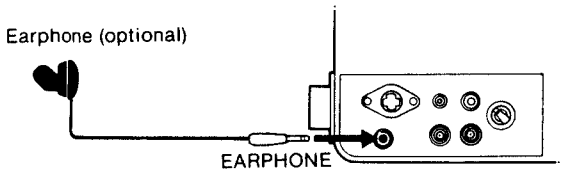
When the recording is finished, press the stop button of the VTR and close the iris of the lens. (When the VCL-1010SY /1012SY lens is used, make sure that the iris is closed automatically.)

Preparation of battery packs
The BP-60 battery pack operates the camera continuously for about 1 hour and 30 minutes. Be sure to use a fully charged battery. Keeping a spare battery in the carrying case is recommended.

Monitoring the sound

When the VTR in use is equipped with the 14-pin camera connector, you can monitor the sound during both recording and playback through an earphone connected to the EAR-PHONE jack of the camera.

The microphone's sound is recorded on CH-2 of the VTR. Therefore, set the audio monitor switch of the VTR to CH-2.



Note

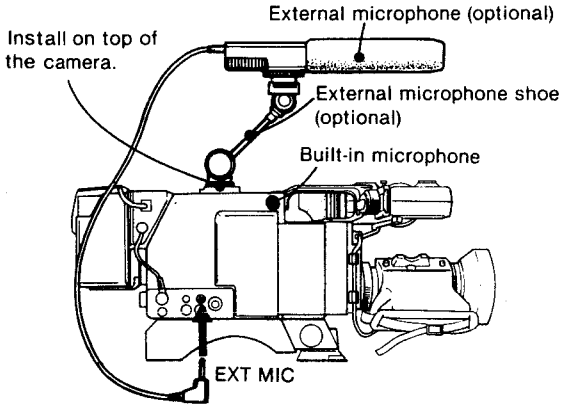
When the VTR is equipped with the 10-pin camera connector, the audio can be monitored only when the camera is powered by a battery using the DC-6 battery adaptor. If the camera is operated on any other power source, it is not possible to monitor the audio on the camera. In this case, connect the earphone to the VTR to monitor the sound.

Microphone

Built-in microphone: When the camera cable is connected to a portable VTR, the built-in microphone is automatically connected, so a sound recording can be made simultaneously with the video recording.

External microphone: To avoid noise made while handling the camera, connect an external microphone to the EXT MIC jack. The built-in microphone is automatically cut off, and the external microphone is selected.

If the microphone picks up a buzzing noise (howling or acoustic feedback), place the microphone at a distance from the camera.



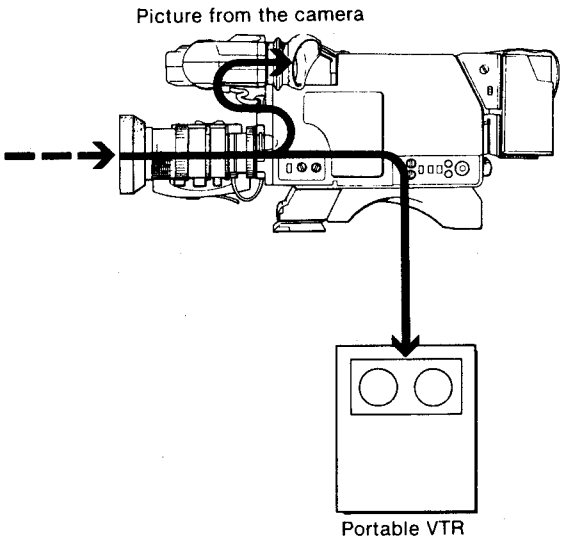
Note

To connect a microphone with a phone plug, use an optional PC-1A plug adaptor (phone to mini).

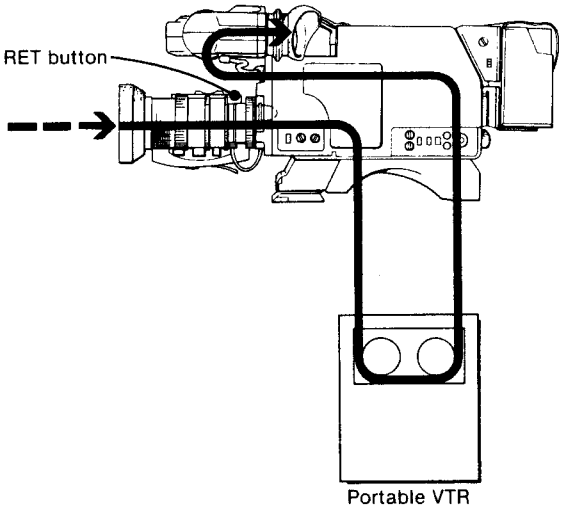
Monitoring the picture

The following pictures can be seen on the viewfinder screen when the camera and the VTR are connected with the CCQ or CCQK camera cable.

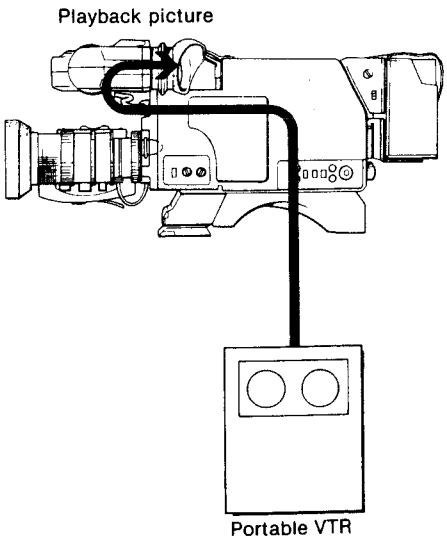
During recording



E-E mode picture from the VTR (return video) when the RET button on the VCL-1010SY/1012SY lens is pressed

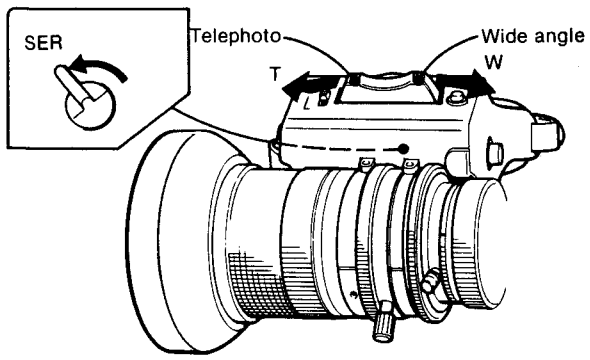


During playback

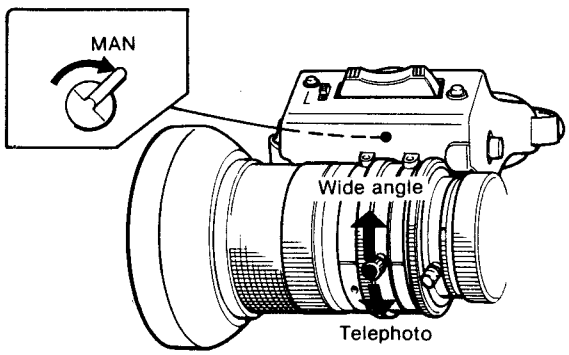


ZOOMING (VCL-1010SY)

Motorized zooming
You can zoom smoothly by pressing either end of the motorized zoom switch when the MAN/SER switch is set to SER. Zooming is fast when the motorized zoom switch is pressed down all the way and becomes slower when the switch is pressed only slightly.



Manual zooming
Manual zooming allows more precise control of the zooming speed. You can zoom manually by manipulating the manual zoom lever with the MAN/SER switch set to MAN.

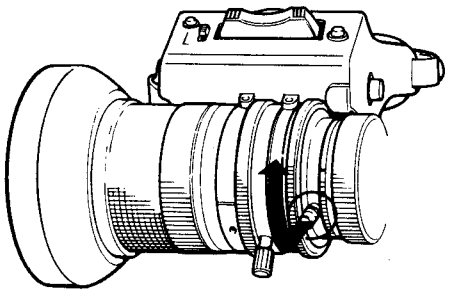


Tips on zooming
Zoom in: From wide angle to telephoto. Used to bring a distant object up close.
Zoom out: From telephoto to wide angle. Used to move back from an object and gradually reveal the object's surroundings.
Following: Zoom up on the subject and follow its movement with the camera. This zoom effect is used, for example, to emphasize the speed of the subject by making the background rush past in a blur.
Correct focusing: If the focus is right in the telephoto position, it will be right when you zoom back to wide angle.
For a more stable picture, we recommend placing the camera on a tripod when zooming. If you zoom with the camera on your shoulder, stand as steady as possible.

CLOSE-UPS — Shooting small or near objects (VCL-1010SY)

The close-up or macro function lets you move in really close for shots of flowers, insects and even photographs. The minimum distance from the lens to the object is 50 mm in the wide-angle position.

1 Adjust the distance between the lens and the object to get just the size image you want.
2 Set the focus ring to "1.1 m".
3 Pull the MACRO lever and turn it as far as it will go toward "MACRO".



4 Adjust the focus by turning the manual zoom lever with the MAN/SER switch set to MAN.
5 If you wish to reduce the size of the object on the screen, first adjust the focus following steps **1** through **4** above, then turn the MACRO lever slightly away from "MACRO" and adjust the focus with the manual zoom lever again.

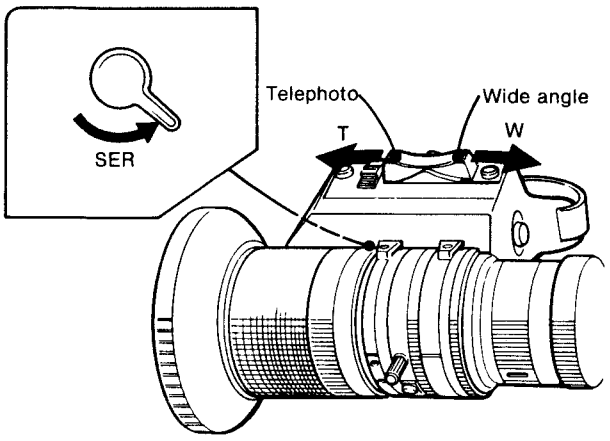
When the close-up operation is finished, turn the MACRO lever away from "MACRO" as far as it will go (to its original position).

Note
If the focus ring is set to "∞" with the MACRO lever turned to "MACRO", the focus can be continuously adjusted from the close-up position to "∞" by turning the manual zoom lever.

ZOOMING (VCL-1012SY)

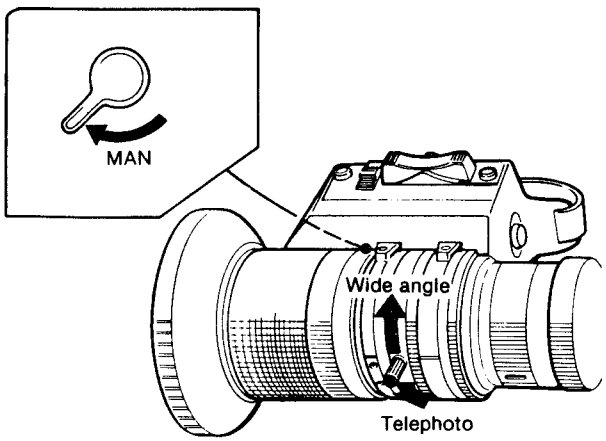
Motorized zooming

You can zoom smoothly by pressing either end of the motorized zoom switch when the MAN/SER selector is set to SER. Zooming is fast when the motorized zoom switch is pressed down all the way and becomes slower when the switch is pressed only slightly.



Manual zooming

Manual zooming allows more precise control of the zooming speed. You can zoom manually by manipulating the manual zoom lever with the MAN/SER selector set to MAN.



Tips on zooming

Zoom in: From wide angle to telephoto. Used to bring a distant object up close.

Zoom out: From telephoto to wide angle. Used to move back from an object and gradually reveal the object's surroundings.

Following: Zoom up on the subject and follow its movement with the camera. This zoom effect is used, for example, to emphasize the speed of the subject by making the background rush past in a blur.

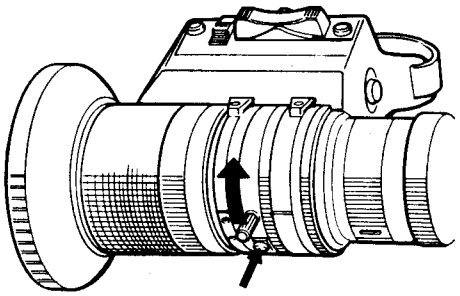
Correct focusing: If the focus is right in the telephoto position, it will be right when you zoom back to wide angle.

For a more stable picture, we recommend placing the camera on a tripod when zooming. If you zoom with the camera on your shoulder, stand as steady as possible.

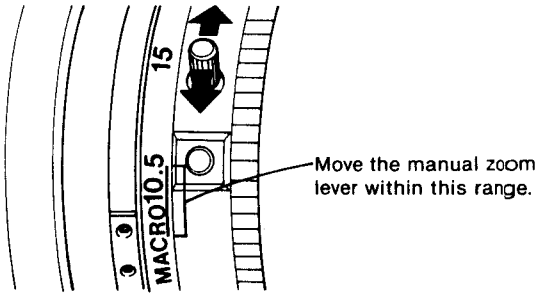
CLOSE-UPS—Shooting small or near objects (VCL-1012SY)

The close-up or macro function lets you move in really close for shots of flowers, insects and even photographs. The minimum distance from the lens to the object is 10 mm in the "10.5 mm" wide-angle position.

1 Set the MAN/SER selector to MAN, and turn the manual zoom lever to the "10.5" wide-angle position.
2 Adjust the distance between the lens and the object to get the size image you want.
3 While holding the MACRO button down, turn the manual zoom lever beyond the "10.5" wide-angle position as far as it will go toward "MACRO".



4 Adjust the focus by turning the manual zoom lever within the range indicated by the yellow line on the lens.



When the close-up operation is finished, turn the manual zoom lever away from "MACRO" until you hear a click.

OUTPUT LEVEL ADJUSTMENT

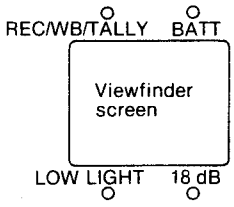
The video output level can be changed with the GAIN selector.
When the GAIN selector is set to AUTO, the Automatic Gain Control (AGC) circuit activates to adjust the video output level so that the picture is clear and well-contrasted.
To record the camera picture with a fixed video output level, set the GAIN selector as follows:

0 dB: The rated output is obtained in this position. Use this position in good lighting conditions (such as outdoors, studio, etc.). A clear picture will be obtained.

6 dB, 12 dB and 18 dB: Use these positions in poor lighting conditions (such as dark locations). However, it must be noted that at these positions, the picture will be somewhat indistinct. Using the 0 dB position and appropriate lights is recommended, whenever possible.

WARNING INDICATORS

The indicators in the viewfinder will show the following:



REC/WB/TALLY indicator

(1) During recording
When a VTR equipped with a Q-type camera connector is used, this indicator blinks until the servo locks, and then illuminates steadily during recording.

(2) Warning indicator
When a VTR equipped with a Q-type camera connector and a warning system (for example, a Sony VO-4800) is used, this indicator illuminates in the same way as the warning lamps of the VTR. For details, refer to the instruction manual of the VTR.

(3) White balance adjustment indication
When the automatic white balance adjustment is completed, this indicator illuminates, and then goes off after a few seconds. (See page 1-24.)

(4) Tally indication
When a camera control unit (CCU) is connected to the camera, this indicator functions as a tally lamp.

BATT indicator

(1) The indicator starts blinking several minutes before the battery of the camera, VTR or CCU is discharged to a level at which the camera, VTR or CCU cannot be operated (about 11 V), and illuminates steadily when the battery has discharged to that level. If the battery is discharged further to below this level, the power to the camera, VTR or CCU is automatically shut off to prevent the battery from over-discharging, and the BATT indicator goes off.
(2) The indicator blinks quickly when the controls or switches of the CCU are operated.

Note
Be sure to replace the battery with a fully-charged one soon after the BATT indicator starts blinking. If you continue recording with a weak battery, you may not get optimum results.

LOW LIGHT indicator

This indicator illuminates when the video output level from the camera is too low for one of the following reasons. (Even when the indicator illuminates, the camera will operate and recording will be made at a low video level.)

(1) The lighting for the object is insufficient. → Add illumination.
(2) The iris of the lens is closed too much for the lighting condition (when the iris is adjusted manually). → Open the iris, or adjust the iris automatically.
(3) The video output level is too low. → Set the GAIN selector to 6 dB, 12 dB, 18 dB or AUTO.

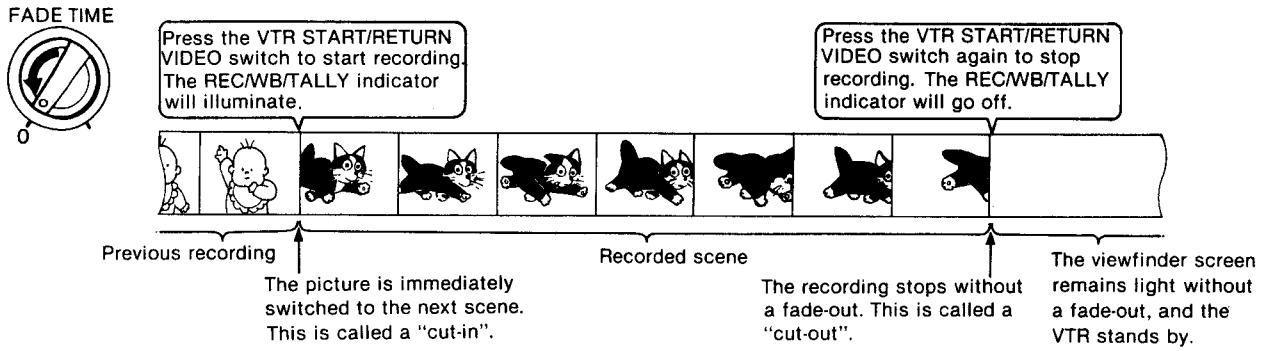
18 dB indicator

This indicator illuminates when the GAIN selector is set to 18 dB.

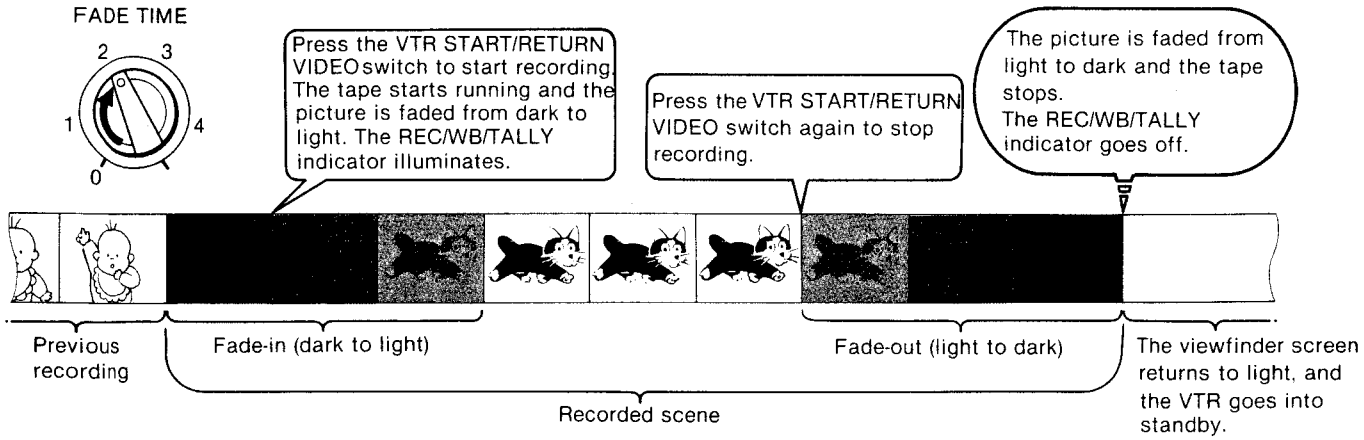
FADE-IN AND FADE-OUT

If a VTR which can make a smooth transition from one scene to another at the end of each scene (such as the VO-4800, which is equipped with a back-space editing function) is used, video programs can be composed shot-by-shot with cut-in, cut-out, fade-in and fade-out using the FADE TIME control. (With other types of VTRs, the fader cannot operate properly.)

Normal recording
Set the FADE TIME control at "0", and compose programs shot-by-shot by pressing the VTR START/RETURN VIDEO switch at the end of each scene. By doing so, you can make a smooth transition from one scene to another without glitch between the scenes.

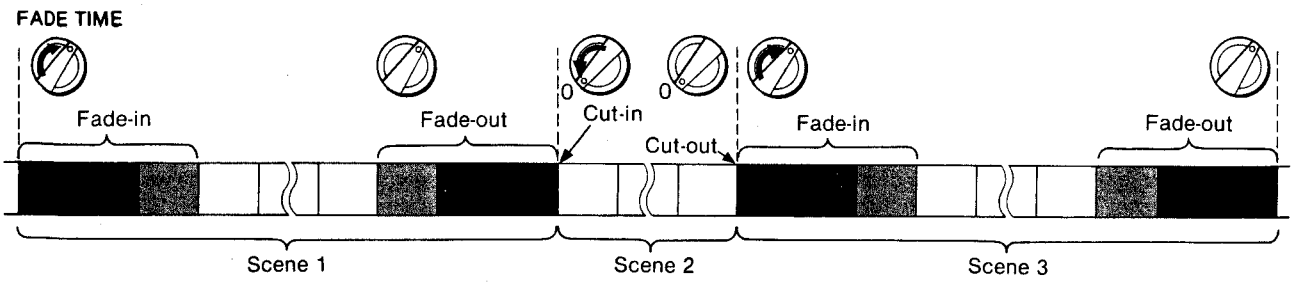

FADE TIME
0
Press the VTR START/RETURN VIDEO switch to start recording. The REC/WB/TALLY indicator will illuminate.
Press the VTR START/RETURN VIDEO switch again to stop recording. The REC/WB/TALLY indicator will go off.
Previous recording
The picture is immediately switched to the next scene. This is called a "cut-in".
Recorded scene
The recording stops without a fade-out. This is called a "cut-out".
The viewfinder screen remains light without a fade-out, and the VTR stands by.

To fade in and out
By setting the fade-in and fade-out time with the FADE TIME control, the picture can be faded from dark to light. At the end of the recording, the picture can be faded from light to dark. This is called a fade-in and fade-out, respectively.

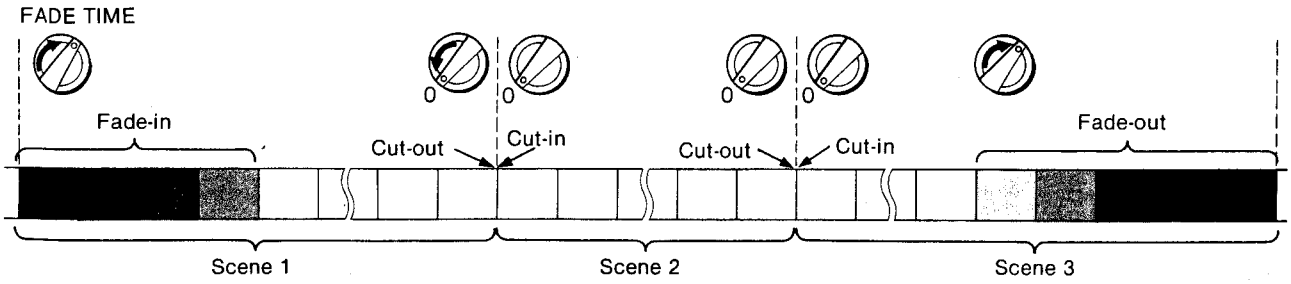

FADE TIME
2
3
1
4
0
Press the VTR START/RETURN VIDEO switch to start recording. The tape starts running and the picture is faded from dark to light. The REC/WB/TALLY indicator illuminates.
Press the VTR START/RETURN VIDEO switch again to stop recording.
The picture is faded from light to dark and the tape stops. The REC/WB/TALLY indicator goes off.
Previous recording
Fade-in (dark to light)
Fade-out (light to dark)
The viewfinder screen returns to light, and the VTR goes into standby.
Recorded scene

Notes
- The numbers (1, 2, 3 and 4) for the FADE TIME control are approximations of seconds.
- The fader will not operate when the recording is started and stopped with the pause button or the stop button of the VTR, even if the fade time is set with the FADE TIME control. (In this case, the programs are composed shot-by-shot with cut-in's and cut-out's.)

Example 1

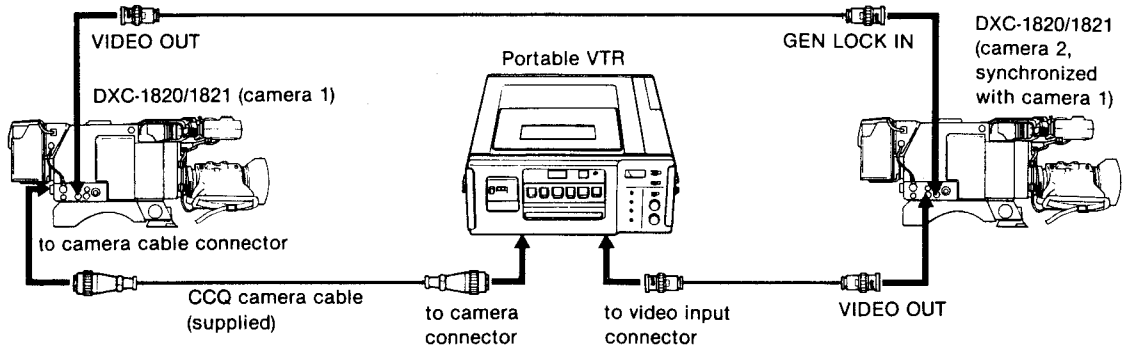


Example 2



USE OF THE GEN LOCK IN CONNECTOR

When the BS or VBS is connected to the GEN LOCK IN connector, the camera synchronizes with the connected signal. Use this connector when two or more cameras are used without a CCU.



RECORDING WITH A TABLE-TOP VTR

The operating procedure is almost the same as when recording with a portable VTR except for the following:

- The VTR START/RETURN VIDEO switch on the camera and the VTR button on the lens do not function. Recording must be started and stopped with the function buttons on the VTR.
- The REC/WB/TALLY indicator in the viewfinder does not function.
- The E-E mode picture (return video) and the playback picture cannot be monitored on the viewfinder screen.

1-9. TIPS FOR SHOOTING AND EFFECTIVE CAMERA WORK

RECORDING LIFELIKE COLORS

If the camera is used without correct white balance adjustment, proper color reproduction cannot be obtained. Even in the same location, the color temperature will vary with the time of the day and the lighting conditions (sunlight, shade, ambient reflected light, etc.). Be sure to attach the filter appropriate to the color temperature of the lighting and adjust the white balance when the camera is moved to another location.

LIGHTING

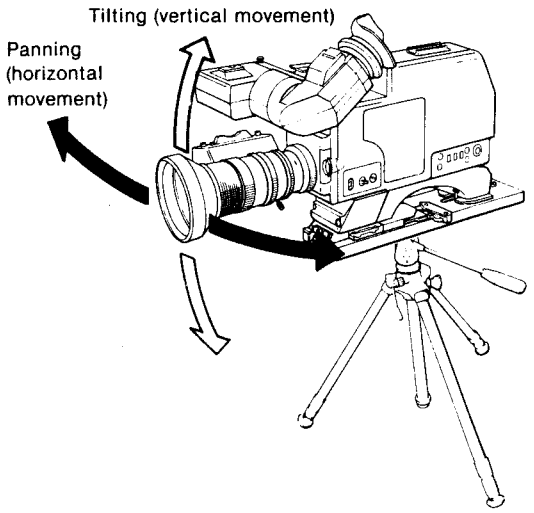
For optimum color recording, illuminating the object with two iodine lamps (500 watts, 3200°K) at a distance of 4 m (13 feet) is recommended to obtain suitable lighting conditions (i.e., an intensity of at least 1,500 lux, 150 footcandles). If the illumination is insufficient, the LOW LIGHT indicator on the viewfinder will light. If this occurs, the video output level must be raised manually or illumination must be added.
Lights should be arranged and their intensity set so that the object is illuminated evenly with sufficient brightness. When installing the lighting system, refer to the light distribution curve of the lamp used.
Undesirable shadows may be a problem when illuminating a three-dimensional object. The color of the shaded areas may be affected and appear as a different color. To reduce this effect, illuminate the object as uniformly as possible. The use of a light, pale-colored background, such as pale gray, is recommended.

FOCUSING AND ZOOMING

Focusing is always more critical in the telephoto position. Therefore, if you start by accurately focusing for a telephoto shot, you are sure to be accurately focused when you zoom back to a more wide-angle shot. In the telephoto position, the "depth of focus" is very shallow, so only one point in the scene is likely to be in focus.
Shooting a distant object means focusing over a wide range, but when shooting something close, you naturally only have to focus over a much narrower range. The narrower the angle of the lens, or in other words the more telephoto it becomes, the more pronounced camera shake will be. If you are taking a telephoto shot, be sure that the camera is held very still.

PANNING AND TILTING

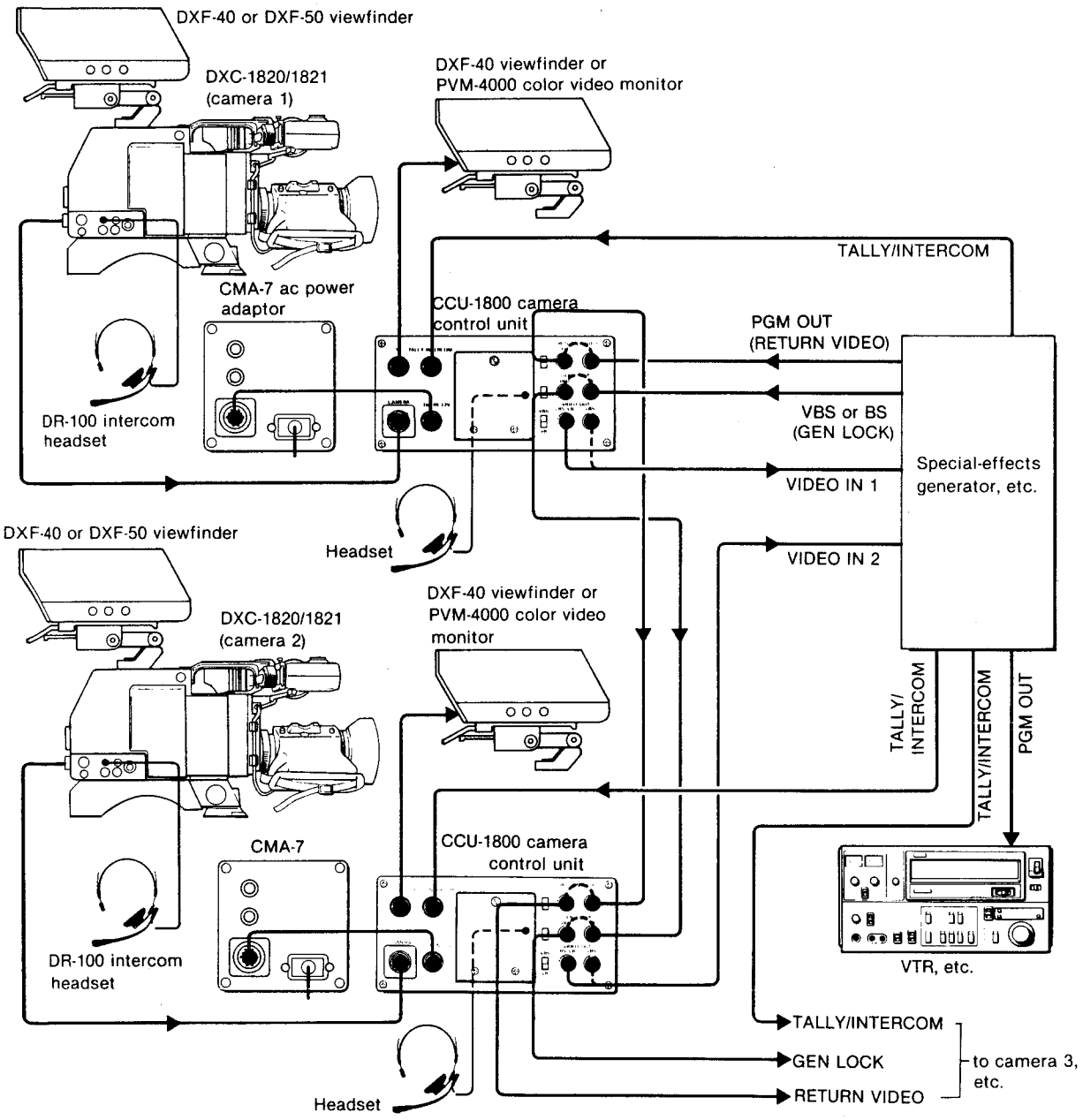
These techniques are used for "sweeping" the camera over landscapes, tall buildings, etc.
Hold the camera still for a moment just before you start to shoot and just after the shot has finished. Start shooting: turn the camera slowly around to the point where the shot will end. This type of slow horizontal sweep is called "panning".
Tilting is when the camera is swept vertically for shots of buildings, trees, mountains and so on. You can either start from the top and work down or start at the bottom and work up. A subtly different effect is achieved, depending on which way you do it. If you are shooting a skyscraper and want to emphasize the height, start from the bottom and tilt up. If, on the other hand, you want to dramatize a person emerging from the front entrance, start at the top and tilt down. Tilting is generally more effective if you sweep the camera more quickly than you would when panning.



1-10. STUDIO USE

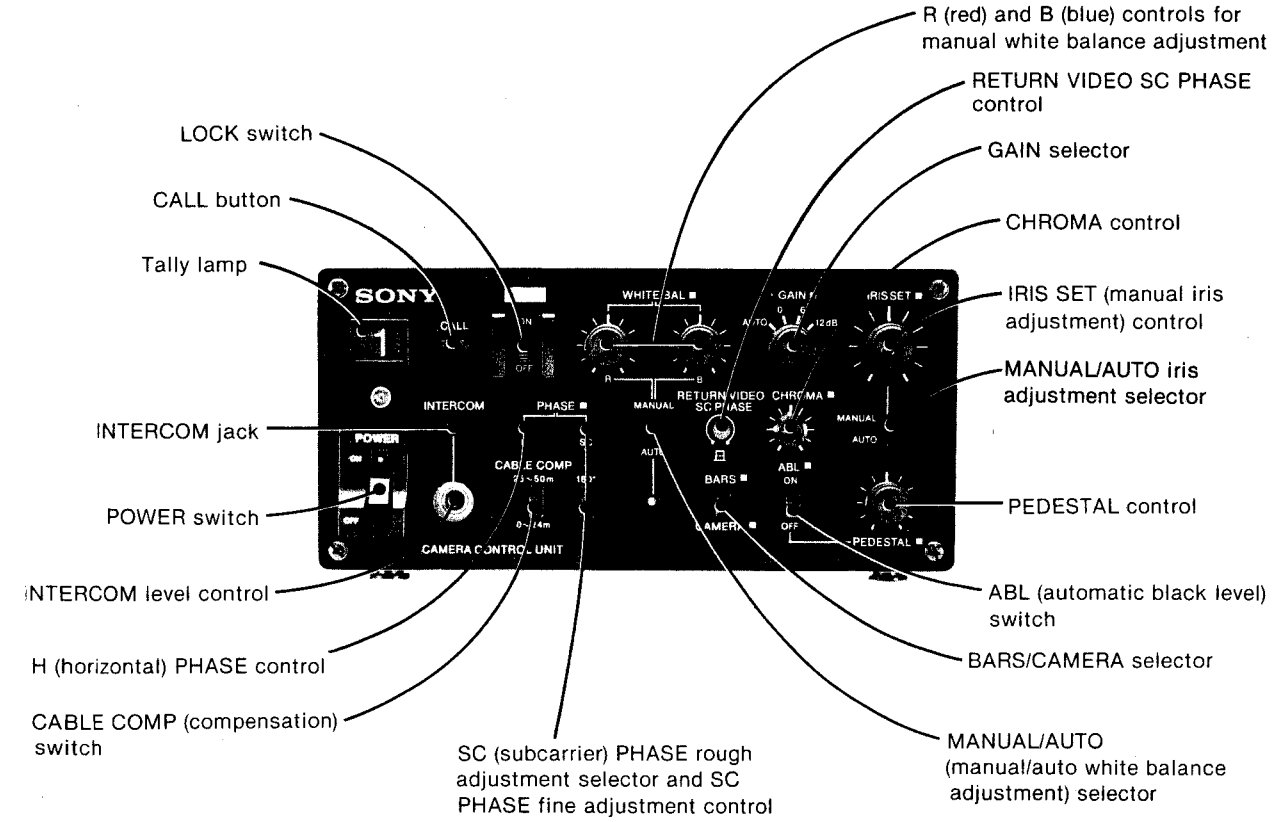
When using more than two cameras simultaneously in a video studio, a special-effects generator, such as the Sony SEG-2000A, is necessary for wiping and switching, and a CCU-1800 camera control unit for matching the picture quality and color of all the cameras.

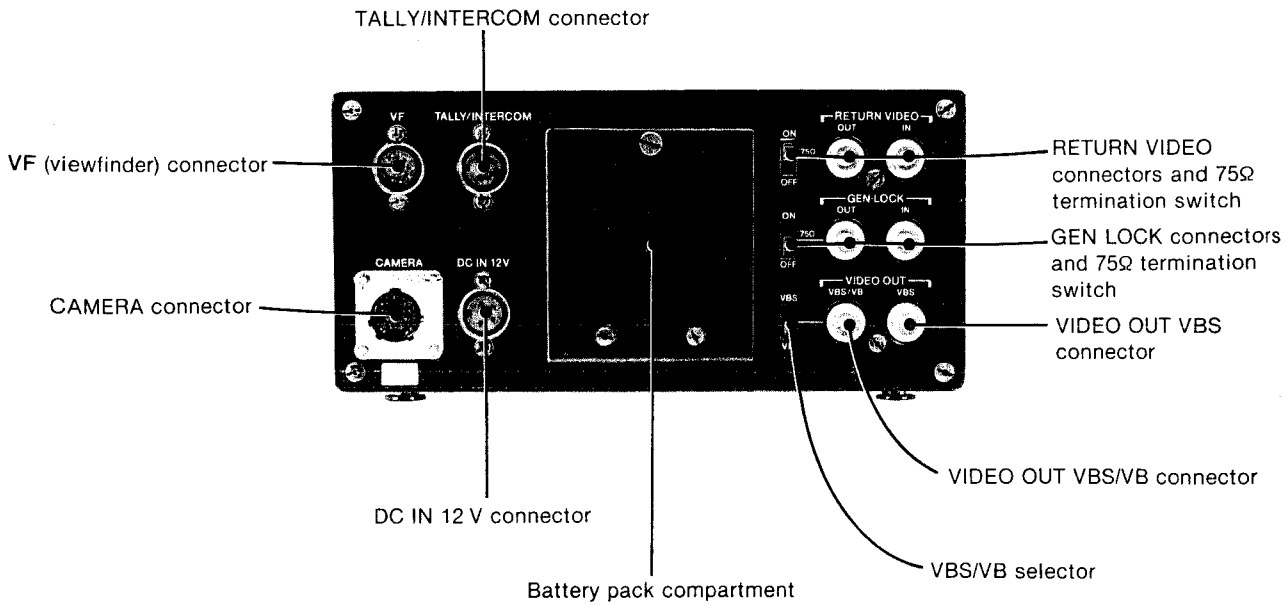
System example



For installation of the DXF-40 or DXF-50 viewfinder, refer to the instruction manual of the DXF-40 or DXF-50.

CCU-1800 camera control unit (optional)
The operation and adjustment of the camera can be remotely controlled by the CCU-1800 camera control unit. For details, refer to the instruction manual of the CCU-1800.

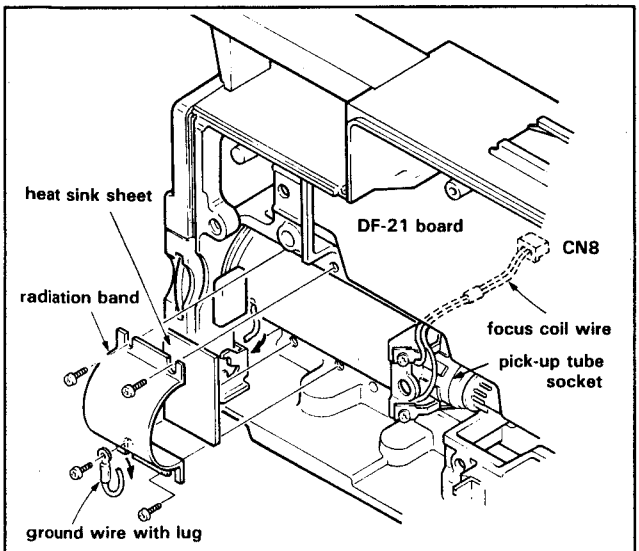




SECTION 2
REPLACEMENT OF MAIN PARTS

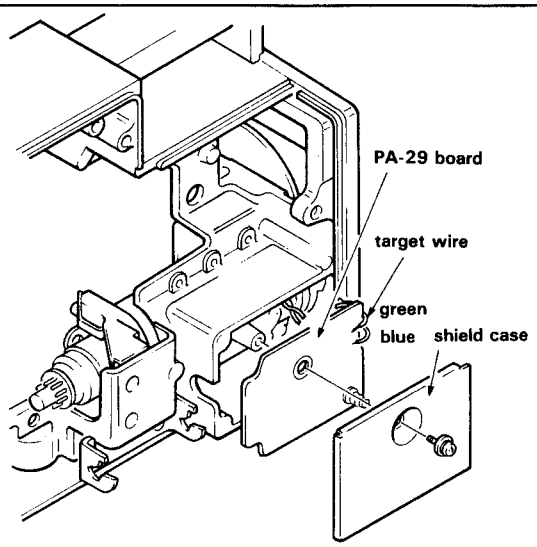
2-1. REMOVAL OF PICK-UP TUBE

STEP 1.



1. Disconnect the connector CN8 of the focus coil wire from DF-21 board.
2. Disconnect the pick-up tube socket from TRINICON tube.
3. Remove the four fixing screws which are holding the radiation band, then remove the radiation band and the heat sink sheet.

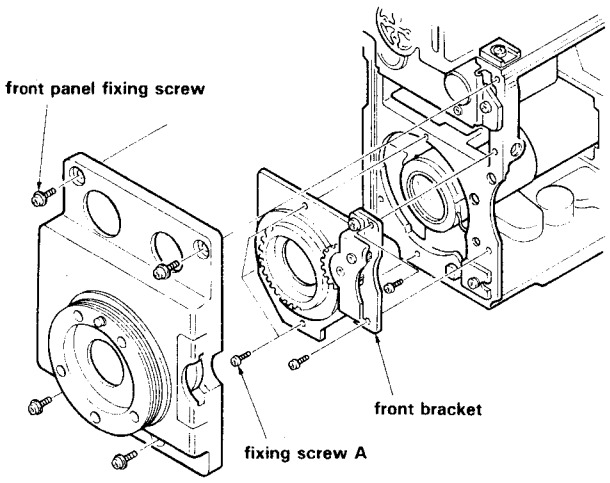
STEP 2.



1. Remove the shield case, then unsolder the green-colour wire and blue-colour wire from PA-29 board.

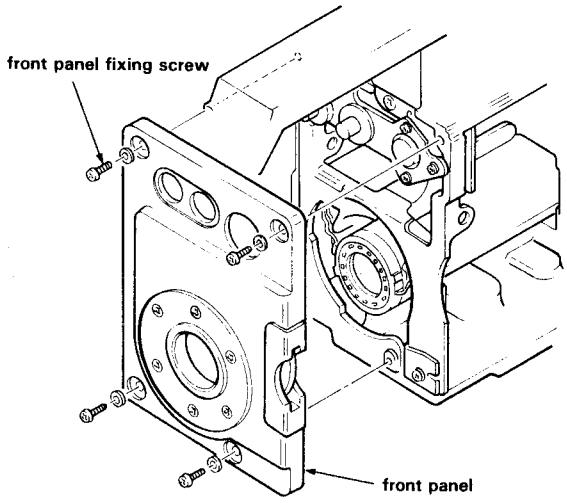
STEP 3.

DXC-1820/1820P/1820PM



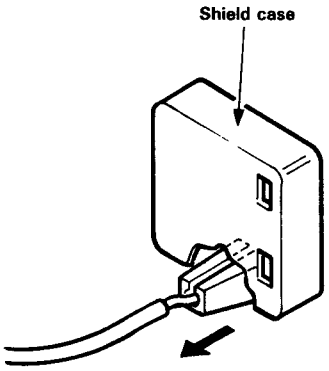
1. Remove the four fixing screws and remove the front panel.
2. Remove the five fixing screws A and remove the front bracket.

DXC-1821/1821P



1. Remove the four fixing screws and remove the front panel.

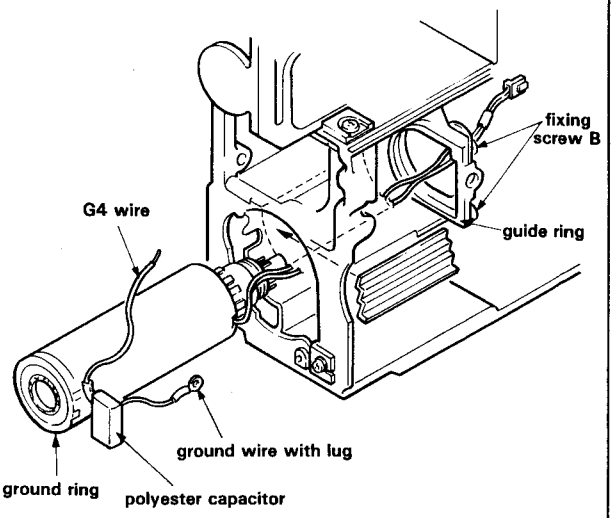
STEP 4.



Pull the connector toward the front until it stops, then remove the lead wire.

1. Remove the G4 wire from the DF-21 board.
2. In order to re-connect the wire,insert the wire all the way to the end, then push the connector.

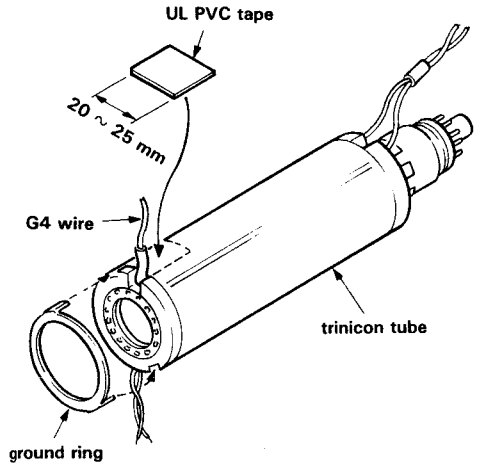
STEP 5



1. Loosen the two fixing screws B and remove the TRINICON tube.
2. Remove the polyester capacitor, ground wire with lug, G4 wire (capacitor side) and ground ring (in front of TRINICON tube)by unsoldering.

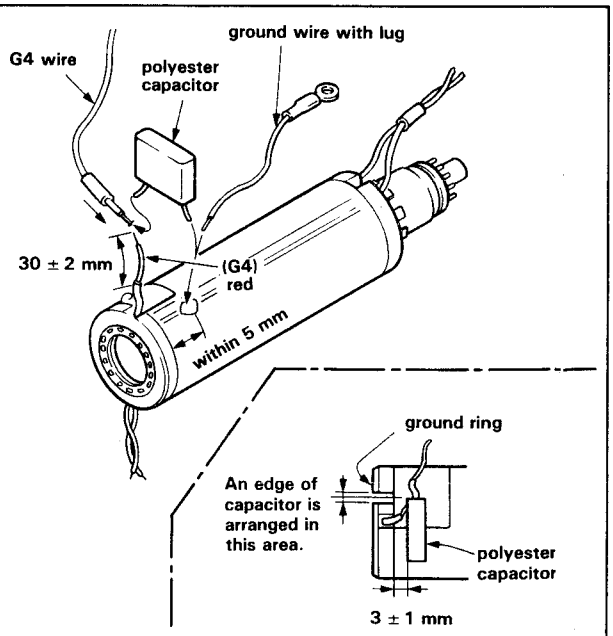
2-2. INSTALLATION OF PICK-UP TUBE

STEP 1



1. Install the ground ring on a new TRINICON tube by soldering, where the ring was removed in step 5.
2. Stick a UL PVC tape on the TRINICON tube as shown above figure.

STEP 2.



1. Mount the polyester capacitor, ground wire with lug and G4 wire by reversing the step 5.

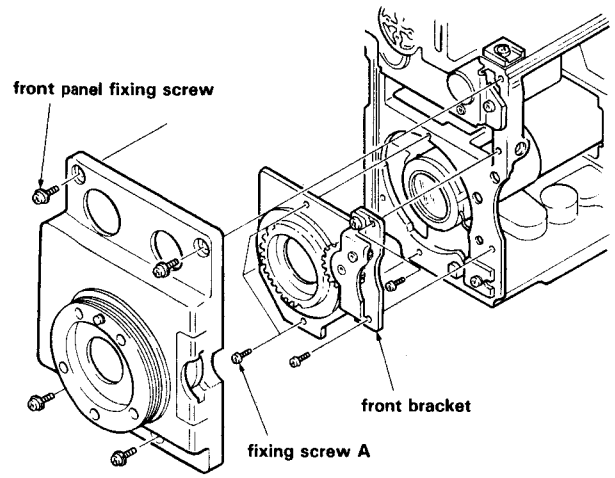
STEP 3.

1. Re-install a TRINICON tube by reversing the steps.
2. Replace the Timer on the CR-21 board with a new Timer which is supplied with a new TRINICON tube.
3. Perform the Alignment as shown below.
   3-2. Mechanical Adjustment
   3-5. Deflection System
   3-6. Y System
   3-7. Chroma System

2-3. MODIFICATION

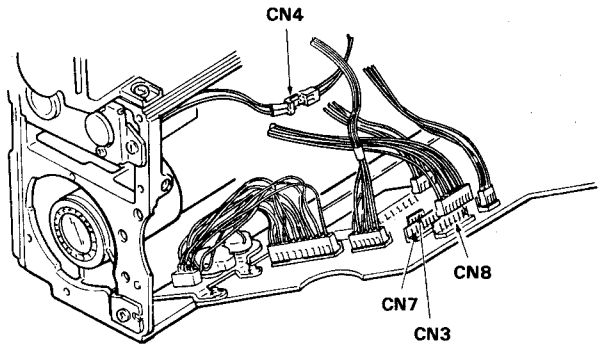
2-3-1. MODIFICATION FROM DXC-1820/ 1820P to DXC-1821/1821P.

STEP 1.



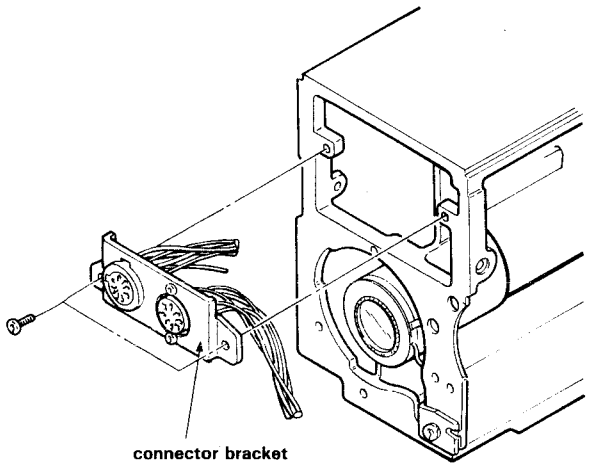
1. Remove the four fixing screws and remove the front panel.
2. Remove the five fixing screws A and remove the front bracket.

STEP 2.



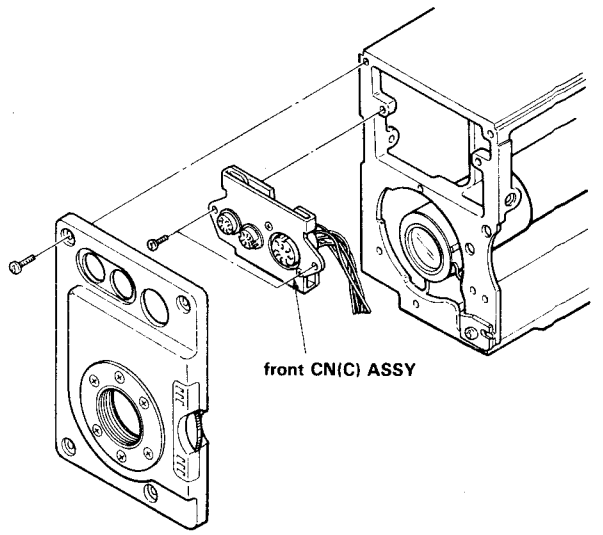
1. Remove the three screws which fix the CR-21 board,and open the CR-21 board.
2. Remove the CN3, CN4 and CN8.

STEP 3.



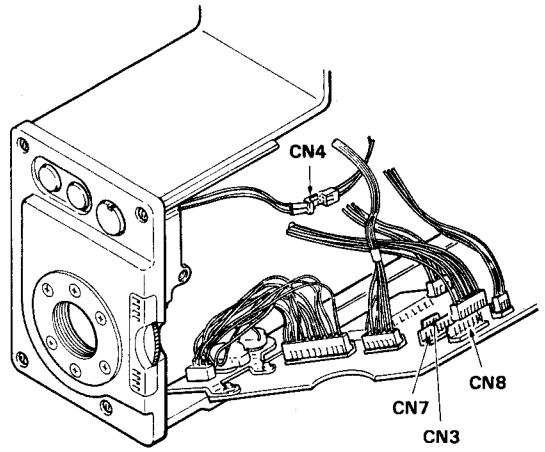
1. Remove the two fixing screws and remove the connector bracket with connectors.

STEP 4.



1. Attach the front CN(C)ASSY by using the two fixing screws.
2. Attach the front panel by using the four fixing screws.

STEP 5.



1. Re-connect the CN3, CN4 and CN8 to CR-21 board. The connector which was connected to the CN8 must be now connected to the CN7. (In case that the camera is being modified from DXC-1821/1821P to DXC-1820/1820P, perform this wiring change in just oposit way: CN7 to CN8)

NOTE: After this modification is completed, be sure to carry out 3-2-1. Mechanical Back Focus Adjustment, 3-2-2. Pickup Tube Horizontal Position Adjustment 3-5-7. Mechanical Centering Adjustment, 3-6-24. MANUAL Iris Adjustment-I, II, 3-6-25, POSI Auto Iris Adjustment and 3-6-26. NEGA Auto Iris Adjustment.

2-3-2. MODIFICATION FROM DXC-1821/1821P to DXC-1820/1820P

Modify the DXC-1821/1821P to DXC-1820/1820P by reversing the steps of 2-3-1. MODIFICATION FROM DXC-1820/1820P to DXC-1821/1821P.

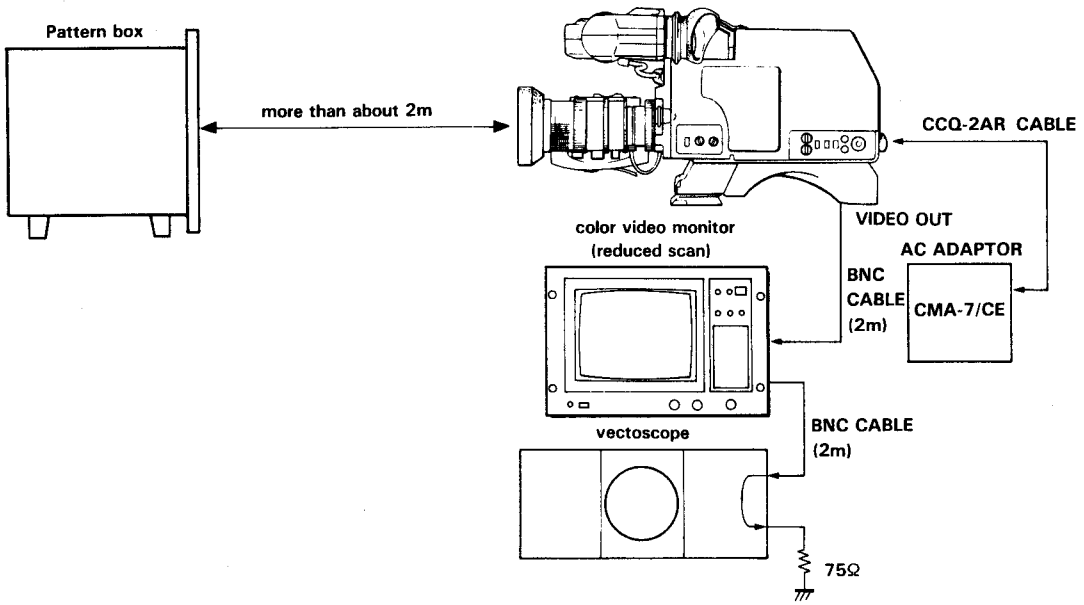
Note: After this modification is completed, be sure to carry out 3-2-1. Mechanical Back Focus Adjustment 3-2-2. Pickup Tube Horizontal Position Adjustment, 3-6-24. MANUAL Iris Adjustment-I, 3-6-25. POSI Auto Iris Adjustment and 3-6-26. NEGA Auto Iris Adjustment.

In order to modify the DXC-1821/1821P to be exact same as the DXC-1820/1820P, the tripod attachment, T shoe assy and shoulder pad will be needed.

SECTION 3
ALIGNMENT

3-1. PREPARATION

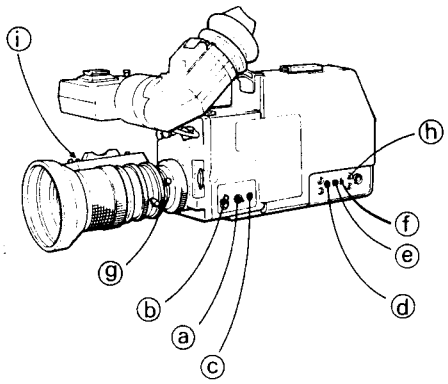
3-1-1. Connection



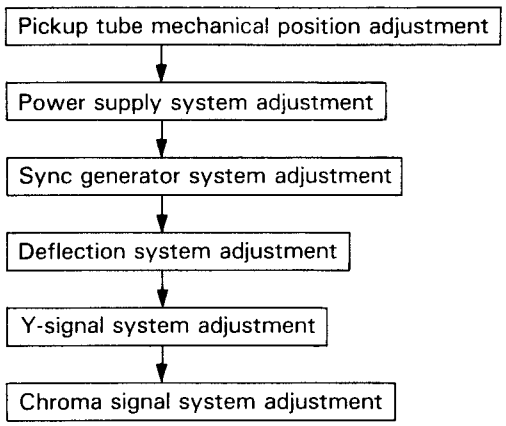
3-1-2. Switch Setting Positions before Adjustment

1. Warm up for about ten minutes before begining adjustments.
2. Set the camera switches and controle as follows :

ⓐ GAIN switch	:	0
ⓑ WHITE BAL switch	:	PRESET
ⓒ FADE TIME volume	:	Fully counterclockwise ↺
ⓓ NEGA/POSI switch	:	POSI
ⓔ BARS/CAMERA switch	:	CAMERA
ⓕ SC PHASE 0°/180° switch	:	0°
ⓖ FILTER	:	1 (3200°K)
ⓗ WHITE BAL FINE (RED, BLUE)	:	Mechanical center
ⓘ LENS IRIS AUTO/MANU	:	MANU



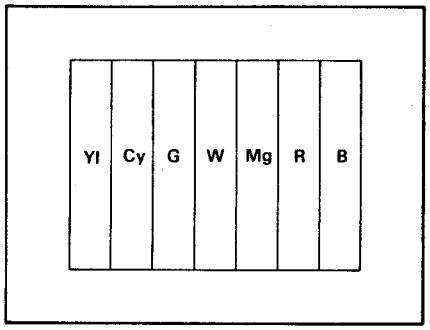
3-1-3. Adjustment Procedure



3-1-4. Adjustment Fixtures and Equipments

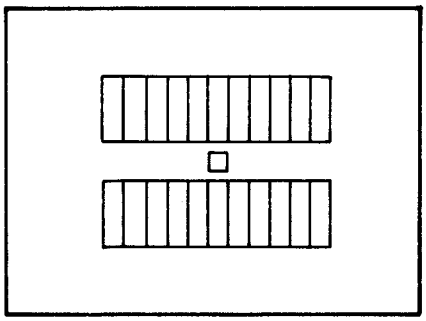
J-6020-250-A **Color Bar Chart**

- For color adjustment.
- Included in the pattern box. (PTB-100/220)



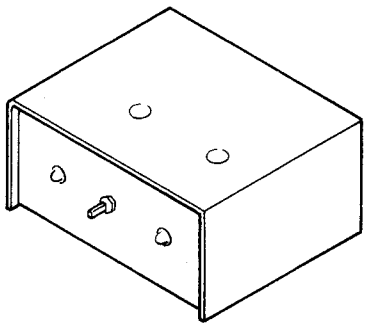
J-6026-130-A **Gray Scale Chart**

- For gamma adjustment.



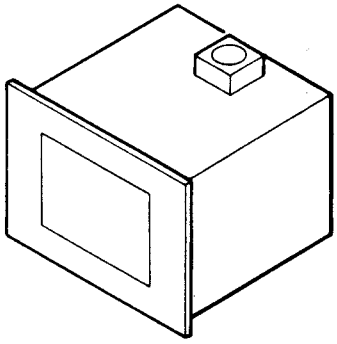
J-6022-400-A **4.5 MHz – 6 MHz Oscillator** (NTSC / PAL-M)
J-6023-420-A **4.5 MHz – 6 MHz Oscillator** (PAL)

- For horizontal deflection size adjustment.



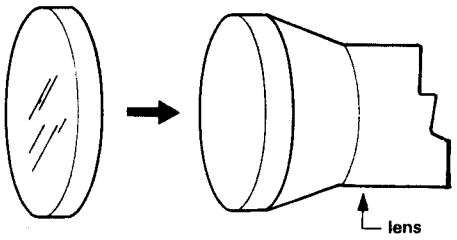
J-6020-490-A **Pattern Box PTB-100** (90 to 130V AC)
J-6020-680-A **Pattern Box PTB-220** (190 to 240V AC)

- Light source for test charts
- With color bar chart (J-6020-250-A)



J-6023-790-A **Yellow Filter**

- For correction of color shading.
- For electrical focus adjustment.



- Dual Trace Oscilloscope
- Vectorscope
- Color Video Monitor (reduced scan)
- Frequency Counter
- Digital Voltmeter
- AC Adaptor, CMA-7/CE
- Mechanical Focus Adjustment Jig
  J-6020-170-A (DXC-1821/P only)
- Eccentric Screwdriver
  J-6040-070-A
- SONY Specified Vectorscope Scale
  J-6025-690-A
- ND Filter (DXC-1820/P/PM only)
  J-6025-820-A
- Siemens Star Chart
  J-6024-340-B

3-2. MECHANICAL ADJUSTMENT

3-2-1. Mechanical Back Focus Adjustment

Object : Siemens-star chart
Lens : OPEN

1. Set the zoom control at TELE so as to obtain the maximum multiplication factor.
   Optically focus the image so as to obtain the maximum resolution.
2. Set the zoom control at WIDE so as to obtain the minimum multiplication factor. Do not optically focus the image at this time.
   Check whether the image is focused on the monitor while turning the zoom control from TELE to WIDE. If the image is not focused, properly set at back focus as follows :
3. Carefllly loosen the fixing screws A and B (Fig. 1). When the zooming mechanism is set at WIDE, turn the back focus adjusting screw so as to obtain the maximum resolution.
4. Tighten the fixing screws after repeating step 1 through step 3 several times.

Note : When the zoom control is set at WIDE, be careful not to be exposed to strong light such as a fluoresent lamp.

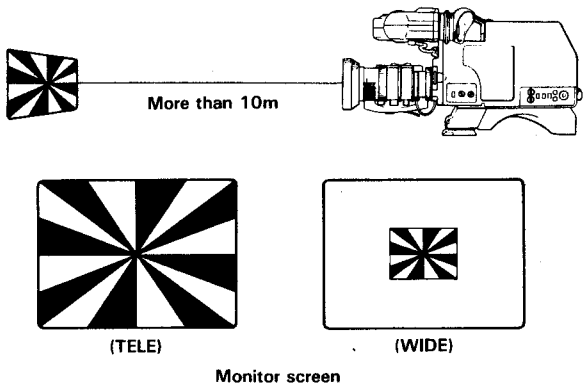
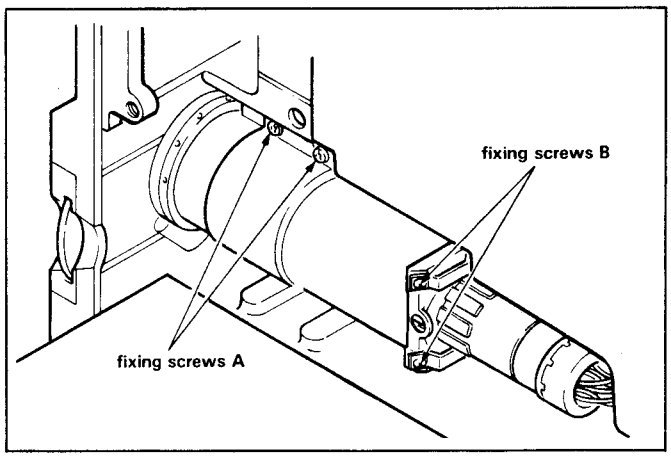
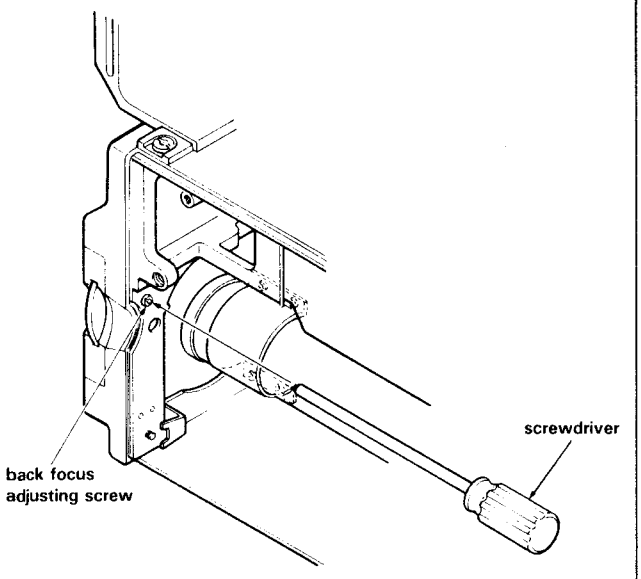
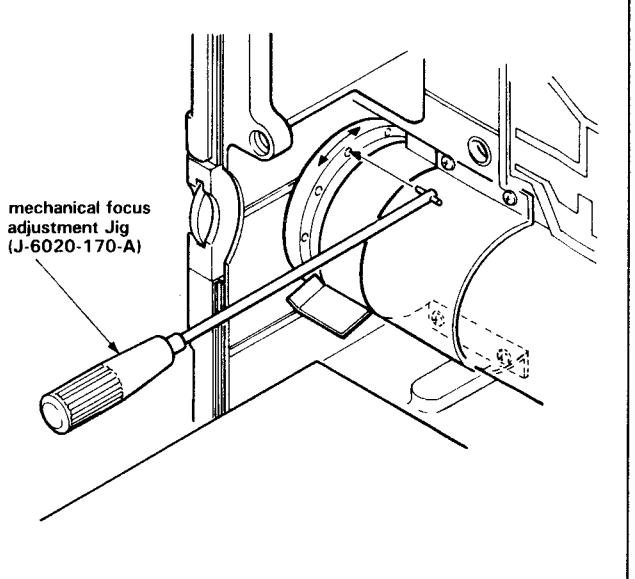


Fig. 1





DXC-1820/1820P/1820PM

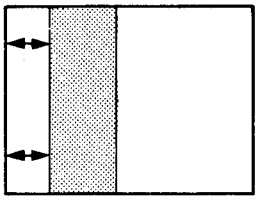


DXC-1821/1821P

3-2-2. Pickup Tube Horizontal Position Adjustment

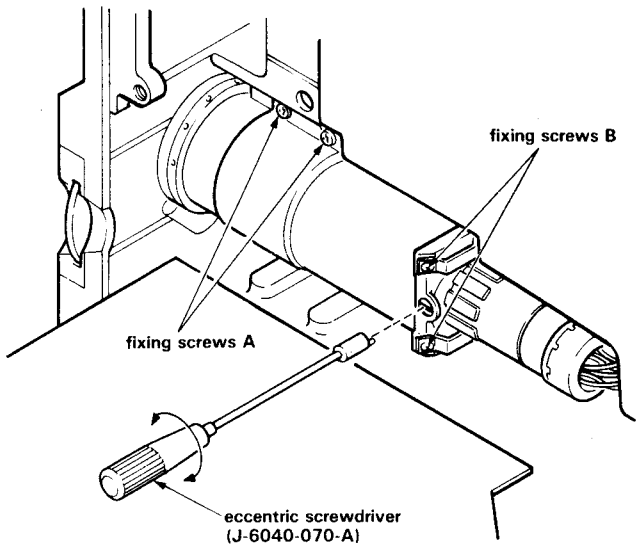
Object : Object which has vertical line such as pillar.
Preparation : Set the tripod adapter horizontally by using a level, and then mount the camera.

1. Check whether the vertical line of object is in parallel with the vertical frame of monitor. If these 2 lines are not in parallel, make the following adjustment.



2. Carefllly loosen the fixing screws A and B shown below.
3. Adjust the positioning screw so that the vertical line of object is in parallel with the vertical frame of monitor.
4. Carefllly tighten the fixing screws.

Note: After this adjustment is completed, check 3-2-1. Mechanical Back Focus Adjustment.



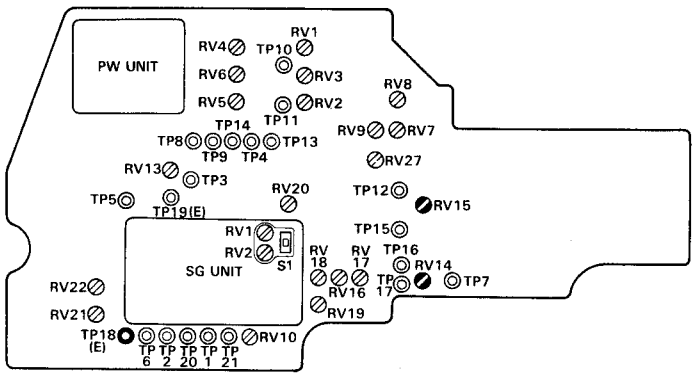
3-3. POWER SUPPLY SYSTEM

3-3-1. +5V Adjustment

Measuring equipment : Digital voltmeter
To be measured : TP16 (GND: TP18)/DF-21 board
To be adjusted : ◐RV14/DF-21 board
Specification : +5.1±0.1V dc

3-3-2. −5V Adjustment

Measuring equipment : Digital voltmeter
To be measured : TP15 (GND: TP18)/DF-21 board
To be adjusted : ◐RV15/DF-21 board
Specification : −5.0±0.1V dc



DF-21 board (component side)

3-4. SYNC GENERATOR SYSTEM

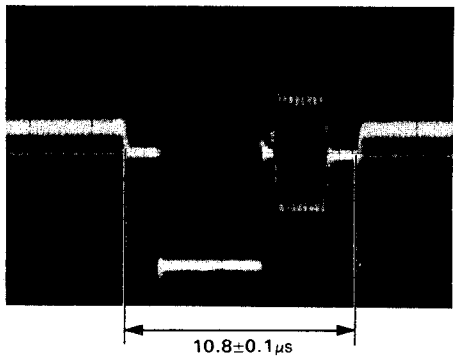
3-4-1. Subcarrier Frequency Adjustment

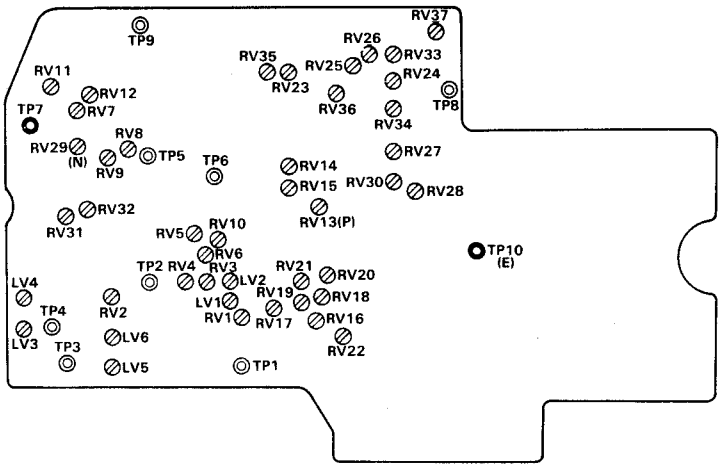
Note: 1. Allow 20 minutes warm-up before measurement.
2. Be sure that GEN LOCK IN terminal is not connected with a connector.

Measuring equipment	:	Frequency counter
To be measured	:	TP21 (GND: TP18)/DF-21 board
To be adjusted	:	◐RV1/SG unit/DF-21 board
Specification	:	3.579.545±5 Hz (NTSC)
		4.433.618±5 Hz (PAL)
		3.575.611±5 Hz (PAL-M)

3-4-2. H. BLKG Width Adjustment (Only for NTSC)

Lens	:	Close
Measuring equipment	:	Oscilloscope
To be measured	:	TP7 (GND: TP10)/CR-21 board
To be adjusted	:	◐RV2/SG unit/DF-21 board
Specification	:	10.8±0.1 μs



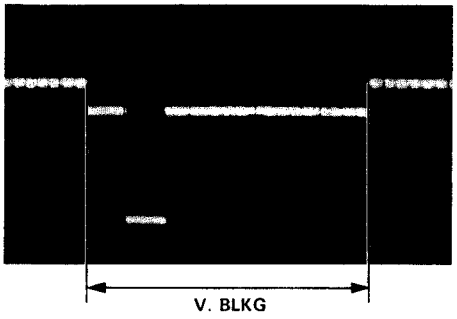


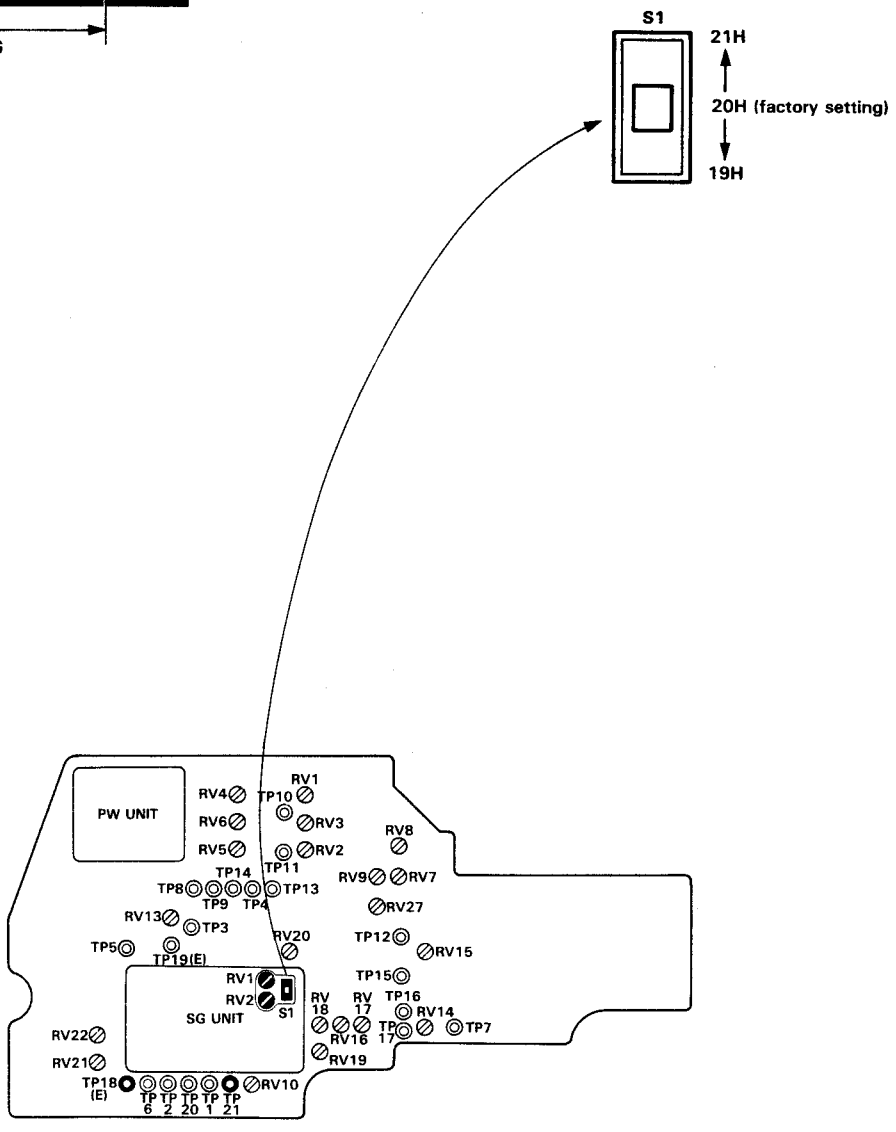
CR-21 board (component side)

3-4-3. V. BLKG Width Adjustment (Only for NTSC)

Lens : Close
Measuring equipment : Oscilloscope
To be measured : TP7 (GND: TP10)/CR-21 board
To be adjusted : S1/SG unit/DF-21 board

1. The V. BLKG width can be selected to 19H, 20H and 21H, respectively, by switch S1/SG unit.
   Usually, set to 20H (center position).

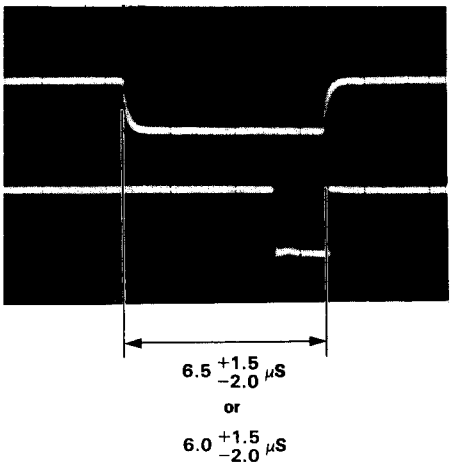




DF-21 board (component side)

3-4-4. Converter Trigger Pulse Phase Adjustment

Lens	:	Close
Measuring equipment	:	Dual trace oscilloscope
To be measured	:	CH1 TP2 (HD) CH2 TP7 } /DF-21 board (GND: TP18)
To be adjusted	:	◐ RV10/DF-21 board
Trigger	:	CH1
Specification	:	$6.5\ ^{+1.5}_{-2.0}\ \mu$S (NTSC, PAL-M) $6.0\ ^{+1.5}_{-2.0}\ \mu$S (PAL)

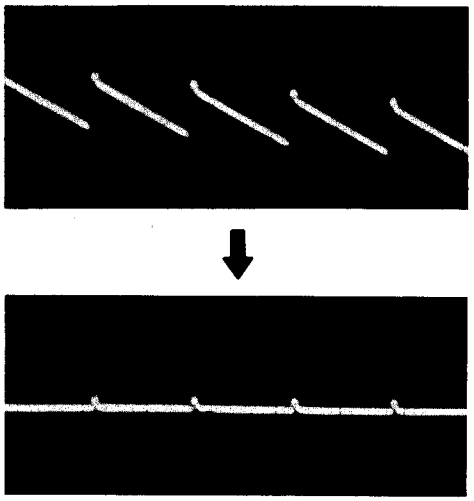


3-5. DEFLECTION SYSTEM

3-5-1. H. Deflection Balance Adjustment

Note: Calibrate the oscilloscope CH1 and CH2 gain.

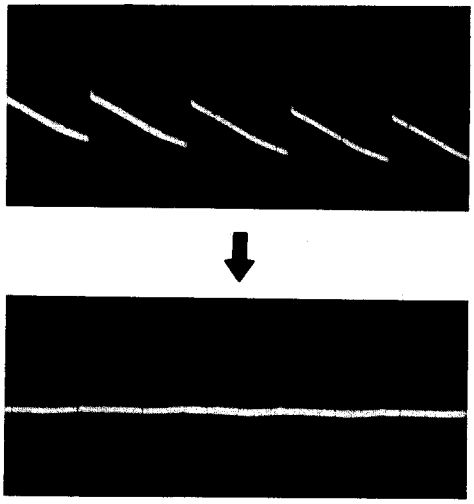
Lens : Close
Measuring equipment : Dual trace oscilloscope (Mode → ADD)
To be measured : CH1 TP8, CH2 TP9, (GND: TP18) } /DF-21 board
To be adjusted : ◐RV6/DF-21 board
Trigger : TP2 (HD)/DF-21 board

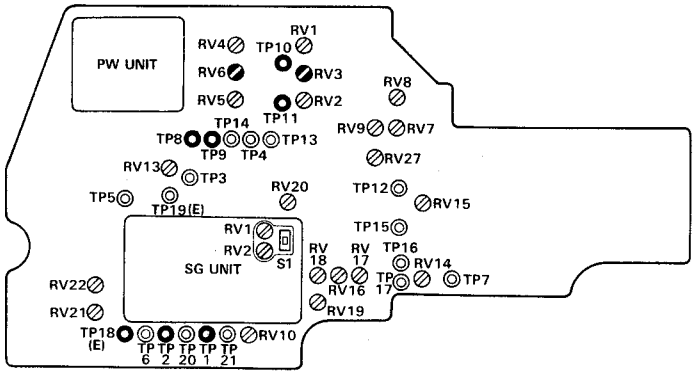


3-5-2. V. Deflection Balance Adjustment

Note: Calibrate the oscilloscope CH1 and CH2 gain.

Lens : Close
Measuring equipment : Dual trace oscilloscope (Mode → ADD)
To be measured : CH1 TP10, CH2 TP11, (GND: TP18) } /DF-21 board
To be adjusted : ◐RV3/DF-21 board
Trigger : TP1 (VD)/DF-21 board



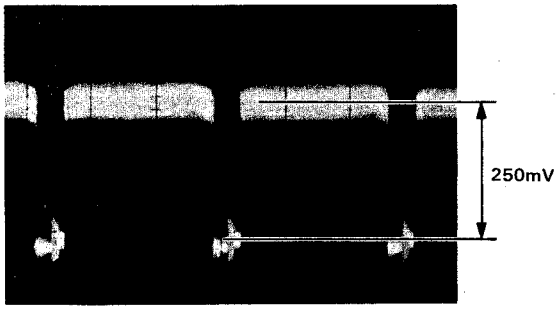


DF-21 board (component side)

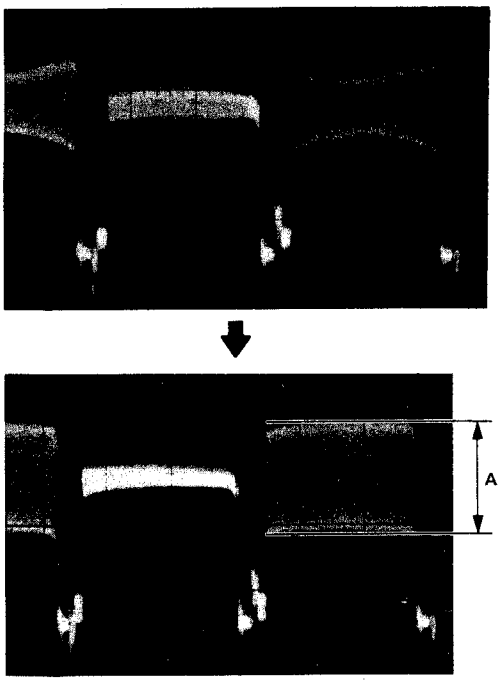
3-5-3. Electrical Focus Adjustment

Object : Overall white
Measuring equipment : Oscilloscope
To be measured : TP1 (GND: TP5)/PR-46 board
To be adjusted : ◐RV13/DF-21 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens control so that the video level at TP1/PR-46 board is 250 mV.



2. Cover the lens with yellow filter.
3. Adjust the ◐RV13/DF-21 board so that the video waveform A is maximized and flat.

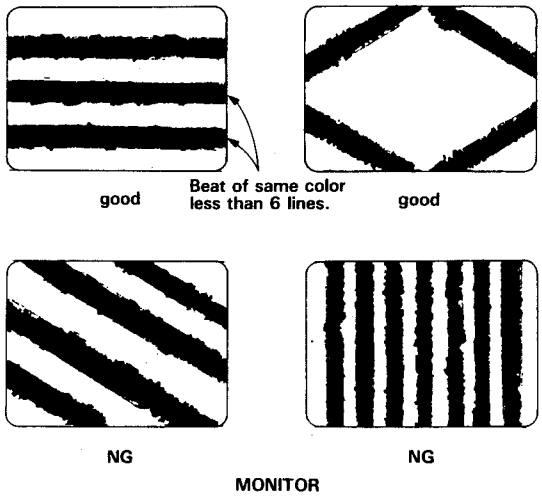


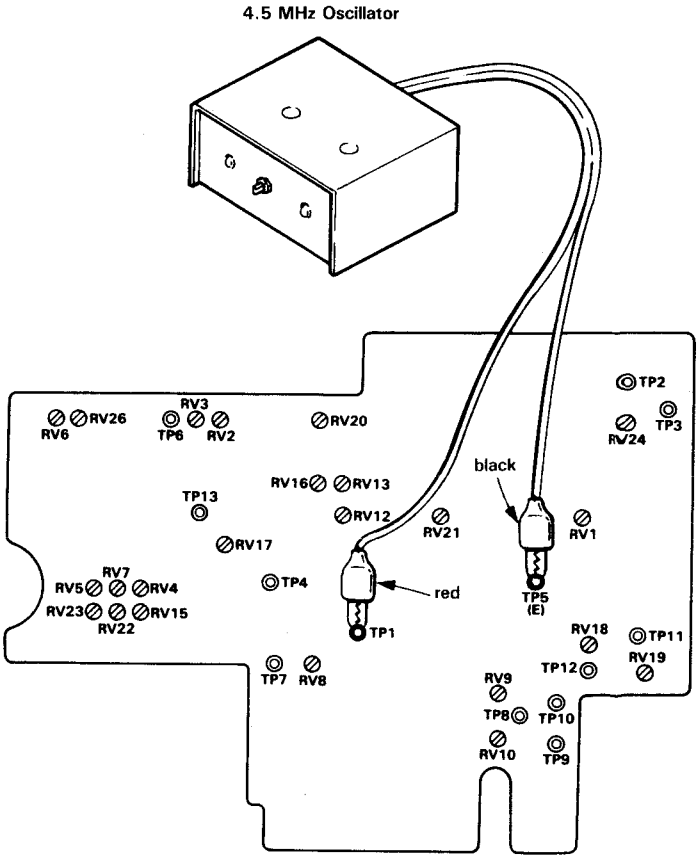
Note: After this adjustment is completed, be sure to carry out 3-5-4. H. Deflection Size Adjustment, 3-5-5. H Centering Adjustment, 3-5-6. CLP1, CLP2 Pulse Phase Adjustment, 3-5-8. V. Deflection Size Adjustment, 3-7-13. Color Adjustment and 3-7-14. Color shading Adjustment.

3-5-4. H. Deflection Size Adjustment

Lens : Close
To be adjusted : ◐RV4/DF-21 board

1. Connect the 4.5 MHz oscillator to the TP1/PR-46 board.
2. Adjust the ◐RV4/DF-21 board so that the beat on the monitor becomes horizontal.





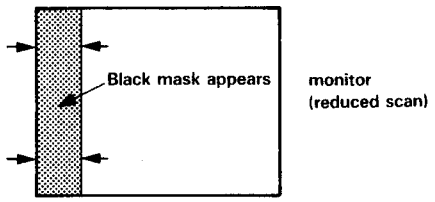
PR-46 board (component side)

3-5-5. H. Centering Adjustment

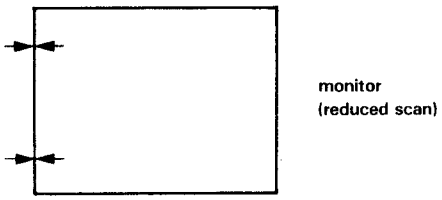
Note: Be sure to carry out 3-5-4. H. Defelction Size Adjustment before this adjustment.

Object	:	Overall white
Lens	:	F5.6
Measuring equipment	:	Oscilloscope
To be measured	:	◐RV5/DF-21 board

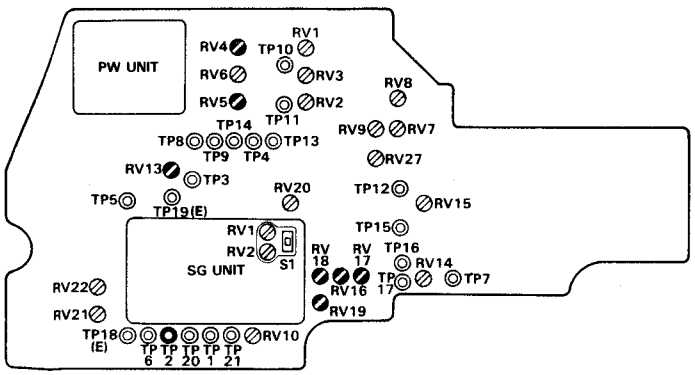
1. Adjust the zoom control so that the white object fills the entire picture.
2. Turn the ◐RV5/DF-21 board fully counterclockwise ↺.



3. Adjust the ◐RV5 so that the black mask frame meets the monitor blanking.



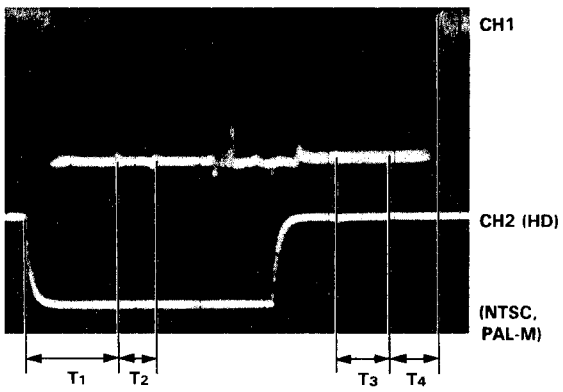
Note: After this adjustment is completed, be sure to carry out 3-5-6. CLP1, CLP2 Pulse Phase Adjustment.



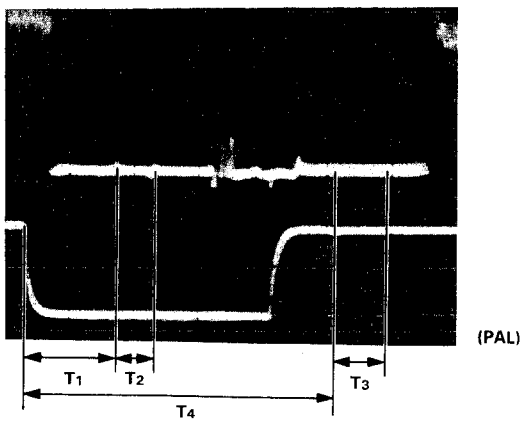
DF-21 board (component side)

3-5-6. CLP1, CLP2 Pulse Phase Adjustment

Object	:	Overall white
Lens	:	F4
Measuring equipment	:	Dual trace oscilloscope
To be measured	:	CH1 TP1 (GND: TP5)/PR-46 board CH2 TP2 (HD)/DF-21 board
To be adjusted	:	◐RV16 ◐RV17 ◐RV18 ◐RV19 } /DF-21 board
Trigger	:	CH2
Specifications (NTSC, PAL-M)	:	T1 = 2.6±0.1 μs ...◐RV17 T2 = 1.0±0.1 μs ...◐RV16 T3 = 1.5±0.1 μs ...◐RV18 T4 = 0.55±0.05 μs ...◐RV19



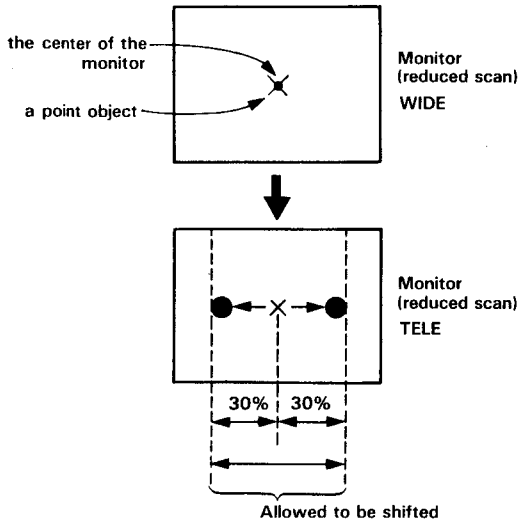
Specifications (PAL)	:	T1 = 2.6±0.1 μs ...◐RV17 T2 = 1.0±0.1 μs ...◐RV16 T3 = 1.5±0.1 μs ...◐RV18 T4 = 8.0±0.1 μs ...◐RV19



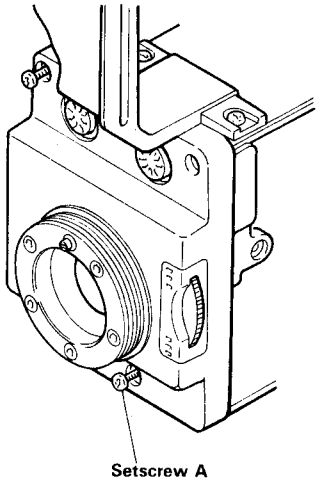
3-5-7. Mechanical Centering Adjustment (Only for DXC-1820/1820P/1820PM)

Preparation : Mark the center on the monitor screen.

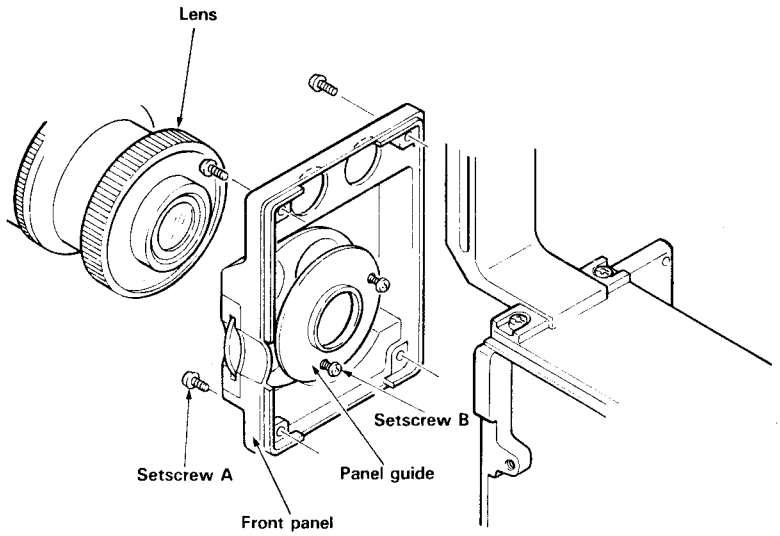
1. Pick up a point object so that the object coincides with the center mark on the monitor screen while setting the zoom control at WIDE position. Check if the object on the monitor screen shifts in less than 30% of the distance from the center to the edge on the monitor screen when zooming from the WIDE to TELE positions.



   Adjustment should be carried out if the above distance goes beyond 30%.
2. Remove the lens, and remove the front panel by removing four setscrews A.
   Loosen two setscrews B which fasten the panel guide behind the front cover so that the panel guide can move left and right.
3. Fasten the front panel with two setscrews as shown below so that the setscrews can easily be tuned with a screwdriver. Set the panel guide at the pickup tube position while moving the front panel left and right.



4. If the specifications can not be satisfied when procedure 1 is carried out again, move the front panel left or right. Repeat procedure 1 until the spesifications are satisfied.
5. If the specifications are satisfired when procedures is carried out, remove two setscrews A which loosely fasten the front panel, and softly remove the front panel with the lens assembly attached. Fasten the panel guide while pressing it with fingers, and fasten two setscrews B. Fasten the front panel with four setscrews A at the given position.

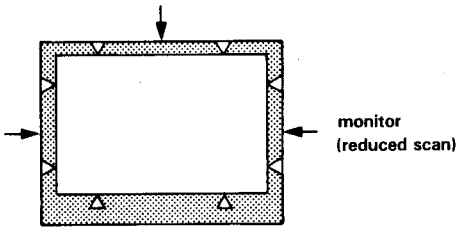


3-5-8. V. Deflection Size Adjustment

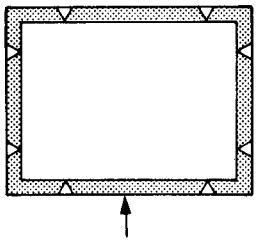
Note: Be sure to carry out 3-5-5. H. Centering Adjustment before this adjustment.

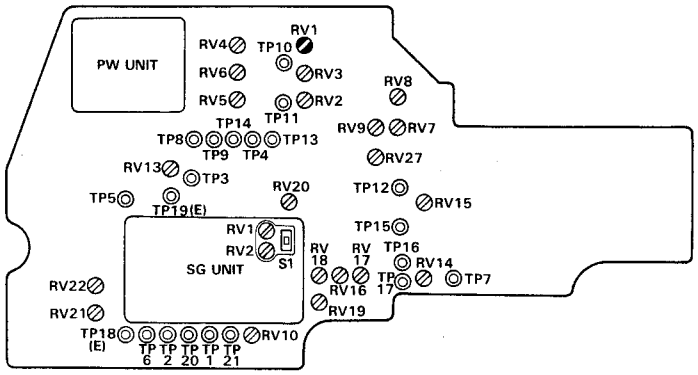
Object	:	Overall white
Lens	:	F5.6
To be measured	:	◐RV1/DF-21 board

1. Set the both side edges and upper edge of the pattern box frame in the reduced scanned frame size on the monitor screen.



2. Set the lower edge of the pattern box frame in the reduced scanned frame size by using the ◐RV1/DF-21 board.





DF-21 board (component side)

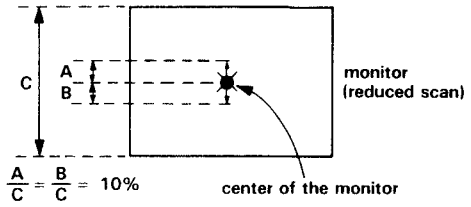
3-5-9. V. Centering Adjustment

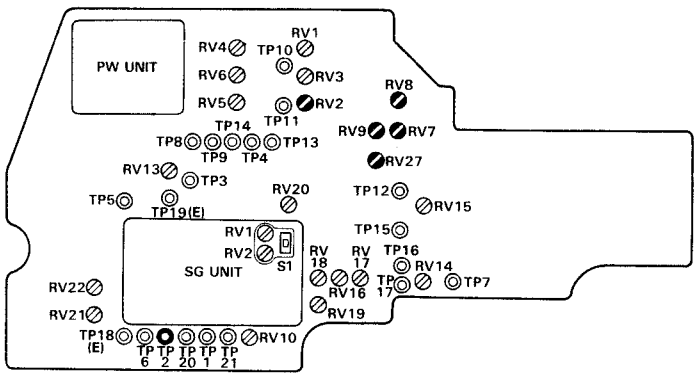
Note: Be sure to carry out 3-5-8. V. Deflection Size Adjustment before this adjustment.

Preparation : Mark the center on the monitor screen.

To be adjusted : ◐RV2/DF-21 board

1. Adjust the ◐RV2/DF-21board so that the point object stays at the center of the monitor while the lens' zoom is turned between TELE and WIDE position.





DF-21 board (component side)

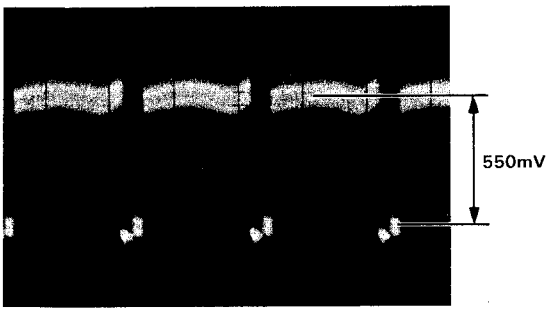
3-6. Y SYSTEM

3-6-1. Beam Set, ABO Adjustment

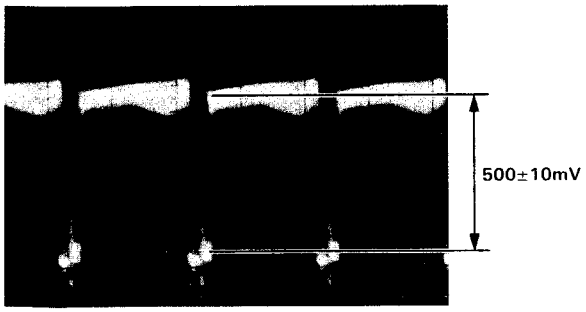
Note: Avoid continuous shooting of bright object in order to protect the pickup tube, for a long time.

Object	:	Overall white
Measuring equipment	:	Oscilloscope
To be measured	:	TP1 (GND: TP5)/PR-46 board
Preparations	:	◐RV7 →Fully Clockwise ↻ ◐RV8 →Fully Clockwise ↻ } /DF-21 board ◐RV27→Fully Counterclockwise ↺
To be adjusted	:	◐RV7 ◐RV8 } /DF-21 board ◐RV9
Trigger	:	TP2 (HD)/DF-21 board

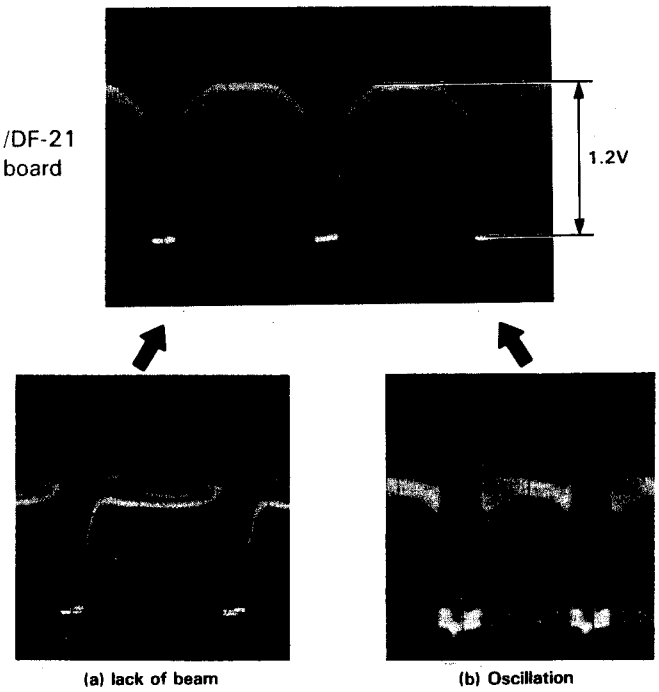
1. Adjust the zoom control so that the white object fills the entire picture.
2. Adjust the lens iris so that the video level at TP1/PR-46 board is 550 mV.



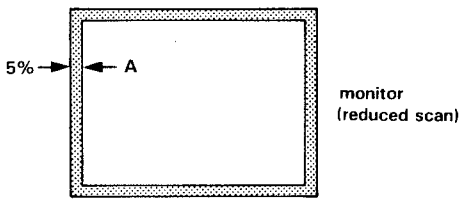
3. Adjust the ◐RV9/DF-21 board so that the video waveform at TP1 just starts to clip at 500±10 mV.

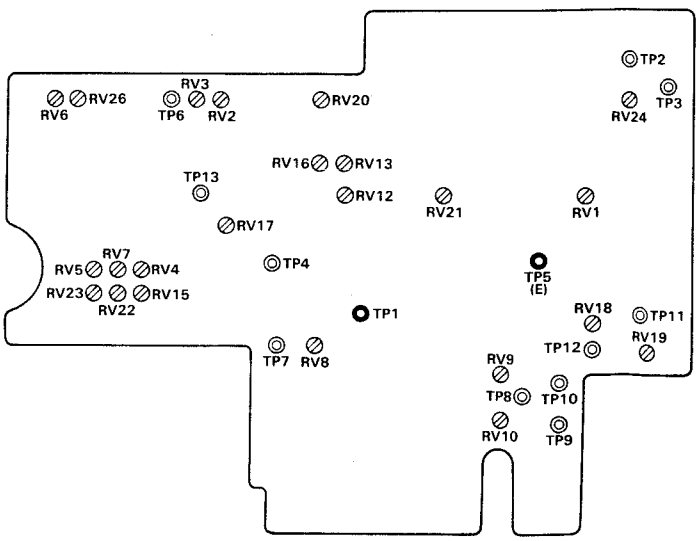


4. Open the lens iris gradually until the video level at TP1/PR-46 board comes 1.2V. If the video level does not reach to 1.2V because of the lack of beam (a), turn the ◐RV8/DF-21 board counterclockwise little by little. If the video waveform oscillates (b), stop oscillating by adjusting the ◐RV7/DF-21 board.



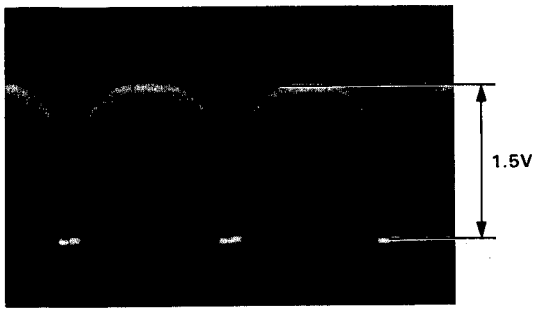
5. Zoom out until the size of pattern box frame, A becomes 5% of entire picture size on the monitor.





PR-46 board (component side)

6. Open the lens iris gradually until the video level at TP1/PR-46 board comes 1.5V.
   If the video level does not reach to 1.5V because of the lack of beam, turn the ◐RV8/DF-21 board counter-clockwise little by little. If the video waveform oscillates, stop oscillating by adjusting the ◐RV7/DF-21 board.

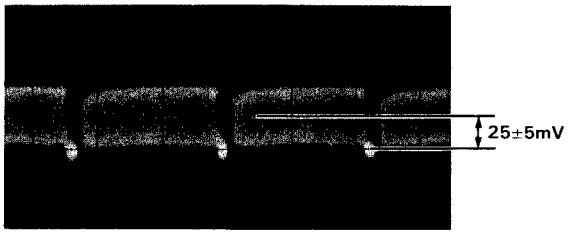


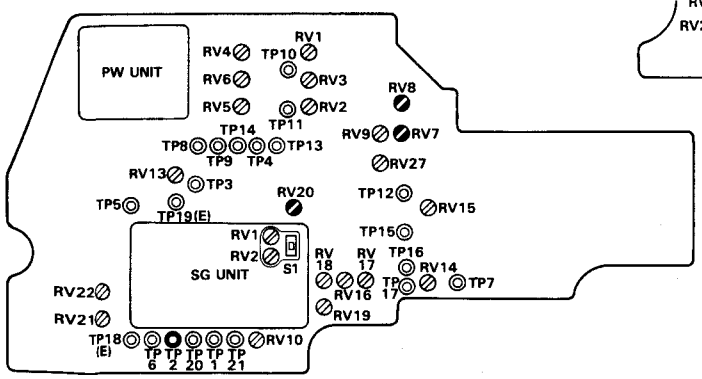
7. Close the lens iris gradually and confirm that the video waveform does not oscillate at any iris position.
8. Adjust the zoom control so that the white object fills the entire picture. Then confirm that the video waveform does not oscillate while gradually opening the lens iris from close to the point where the video level at TP1/PR-46 board becomes 1.2V.
9. If the video waveform oscillates in step 6 or step 7, readjust from step 1 by using the specification of 625±10 mV instead of 500±10 mV in step 2.

Note: Beam Set Adjustment and 3-5-3. E. Focus Adjustment effect each other, therfore, the several times repeated adjustment will be required.

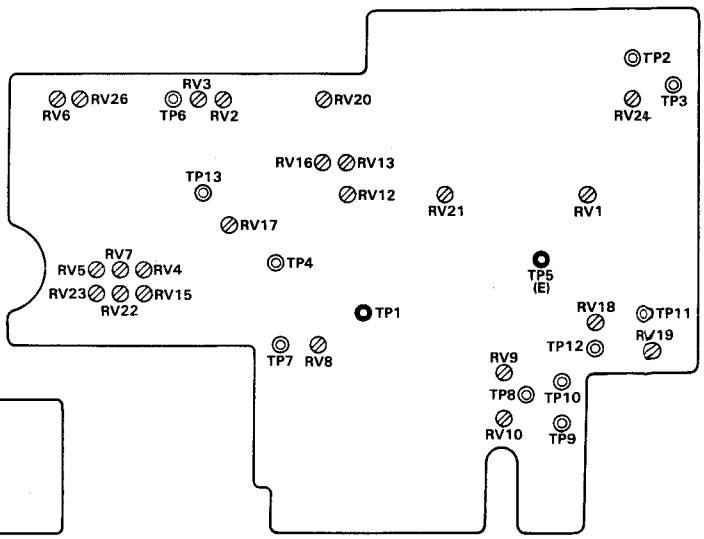
3-6-2. Bias Light Adjustment

Lens	:	Close
Measuring equipment	:	Oscilloscope
To be measured	:	TP1 (GND: TP5)/PR-46 board
To be adjusted	:	◐RV20/DF-21 board
Trigger	:	TP2 (HD)/DF-21 board
Specification	:	25±10 mV





DF-21 board (component side)

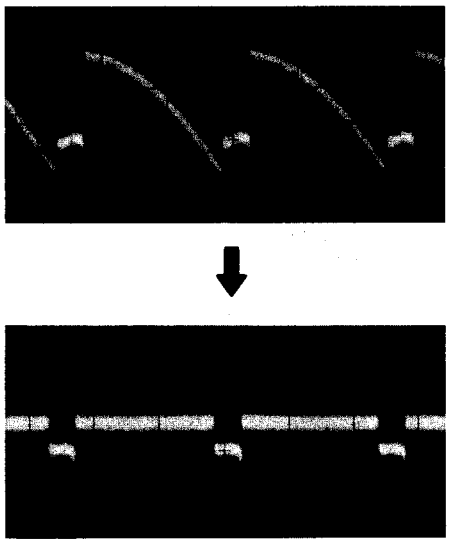


PR-46 board (component side)

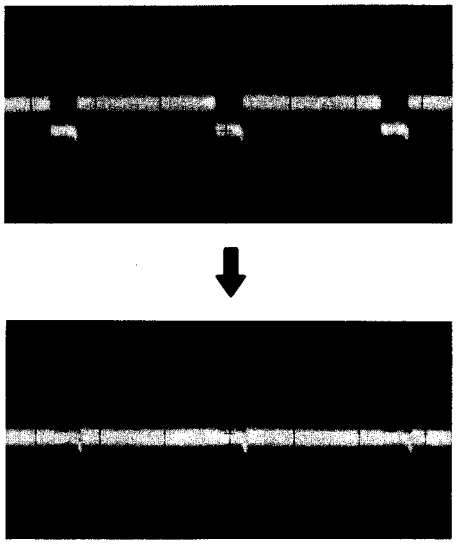
3-6-3. Y. Shading Offset Adjustment

Lens	:	Close
Measuring equipment	:	Oscilloscope
To be measured	:	TP8 (GND: TP10)/CR-21 board
To be adjusted	:	◐RV33, ◐RV34, ◐RV35, ◐RV36, ◐RV37 /CR-21 board
Trigger	:	TP2 (HD)/DF-21 board

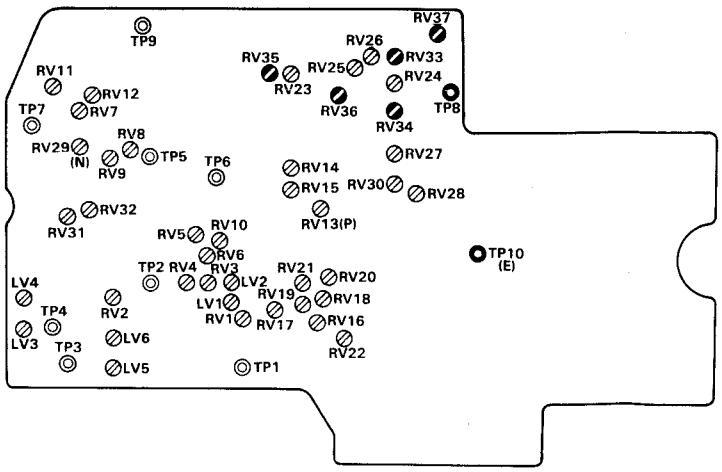
1. Adjust the ◐RV33, ◐RV34, ◐RV35 and ◐RV36/CR-21 board so that the shading correction signal becomes disappeared.



2. Adjust the ◐RV37/CR-21 board so that the signal waveform at TP8/CR-21 board becomes flat.



Note: It is necessary to adjust 3-6-4. H Shading Adjustment and 3-6-5. V Shading Adjustment after this adjustment.

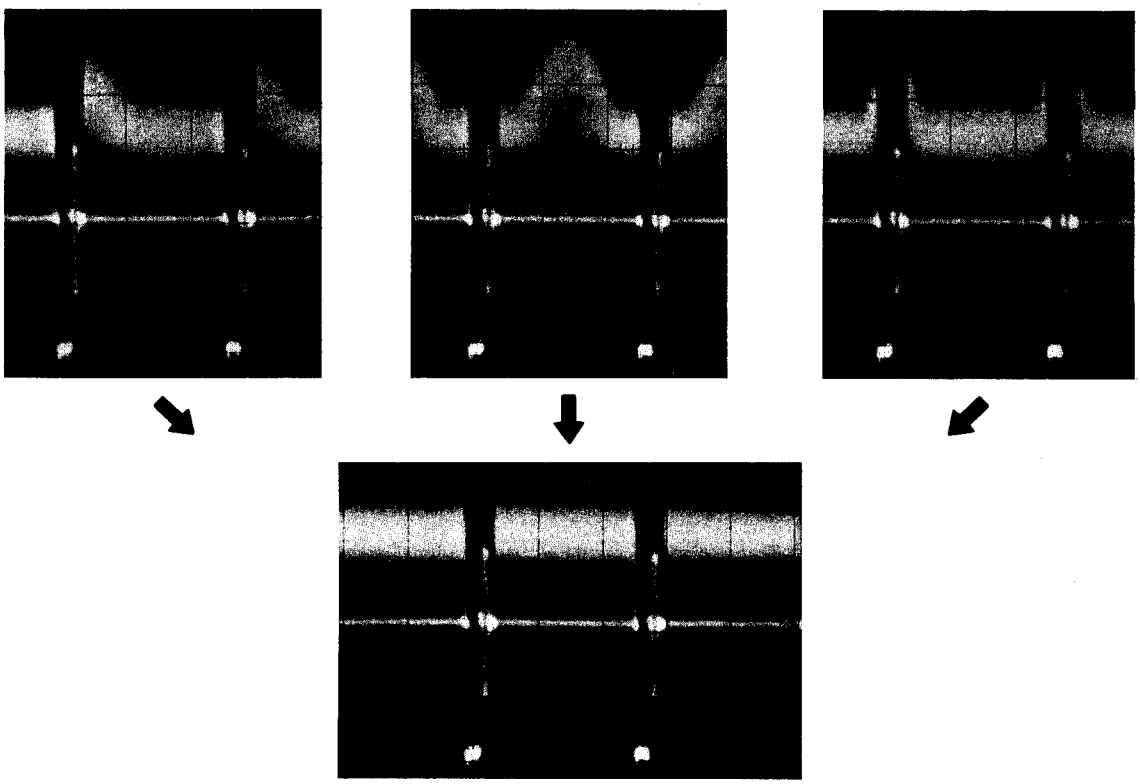


CR-21 board (component side)

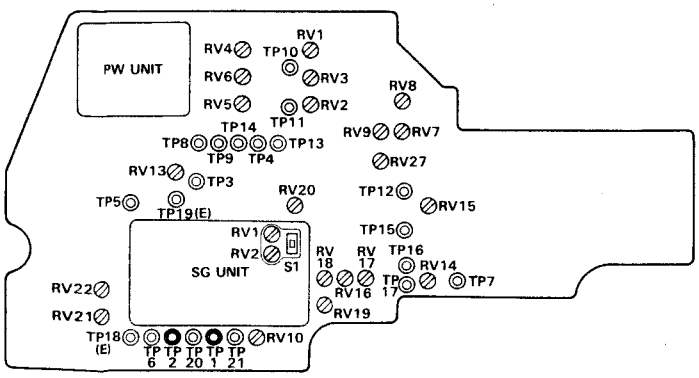
3-6-4. H. Shading Adjustment

Lens	:	Close
Measuring equipment	:	Oscilloscope
To be measured	:	TP7 (GND: TP10)/CR-21 board
Preparations	:	GAIN switch→"18 dB" ◐RV9/PR-46 board→Fully clockwise ↻
To be adjusted	:	◐RV33 ◐RV34 } /CR-21 board
Trigger	:	TP2 (HD)/DF-21 board

1. Adjust the ◐RV33 and ◐RV34/CR-21 board so that the video waveform becomes flat.



Note: After this adjustment is completed, reset the GAIN switch at "0" position and be sure to carry out 3-6-15. Setup Adjustment.

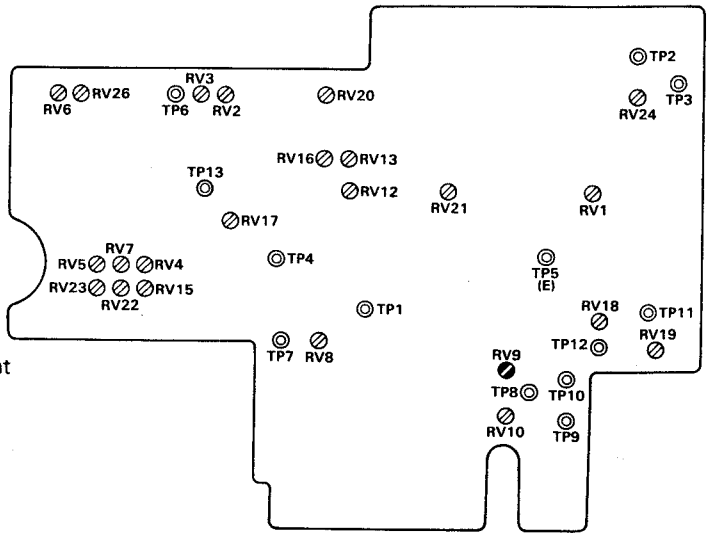


DF-21 board (component side)

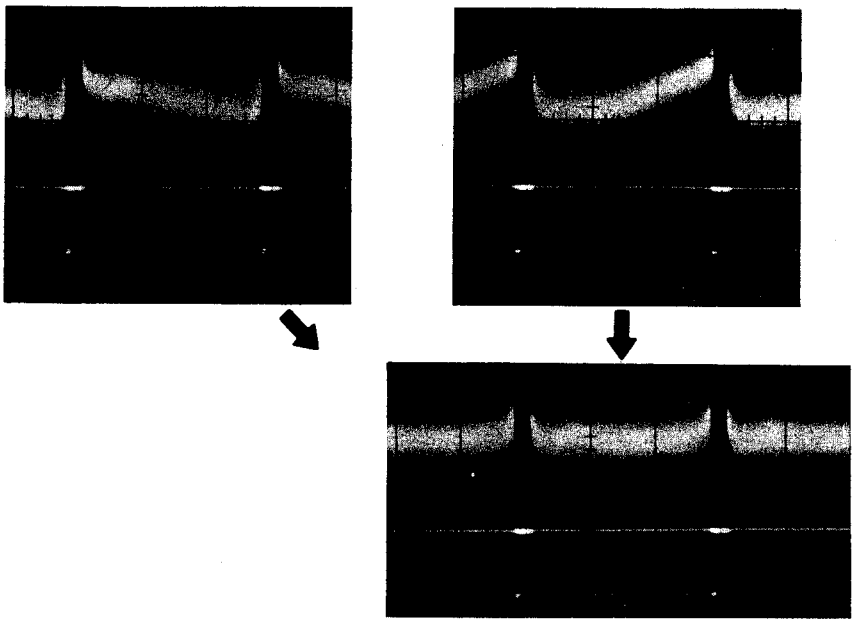
3-6-5. V. Shading Adjustment

Lens	:	Close
Measuring equipment	:	Oscilloscope
To be measured	:	TP7 (GND: TP10)/CR-21 board
Preparations	:	GAIN switch→"18 dB" ◐RV9/PR-46 board→Fully clockwise ↻
To be adjusted	:	◐RV35 ◐RV36 } /CR-21 board
Trigger	:	TP1 (VD)/DF-21 board

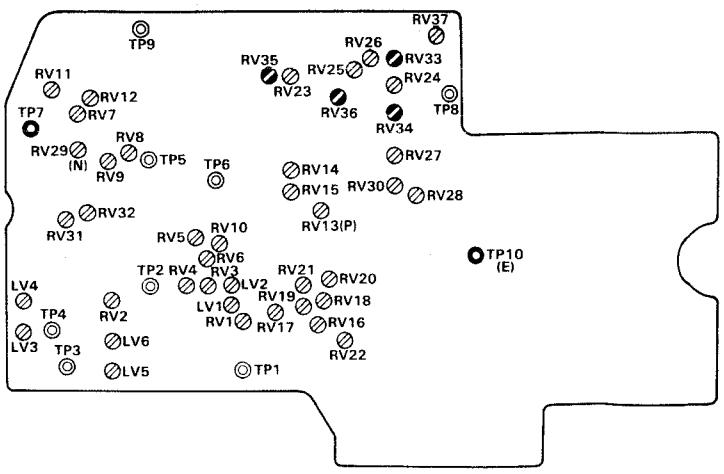
1. Adjust the ◐RV35 and ◐RV36/CR-21 board so that the video waveform becomes flat.



PR-46 board (component side)



Note: After this adjustment is completed, reset the GAIN switch at "0" position and be sure to carry out 3-6-15. Setup Adjustment.

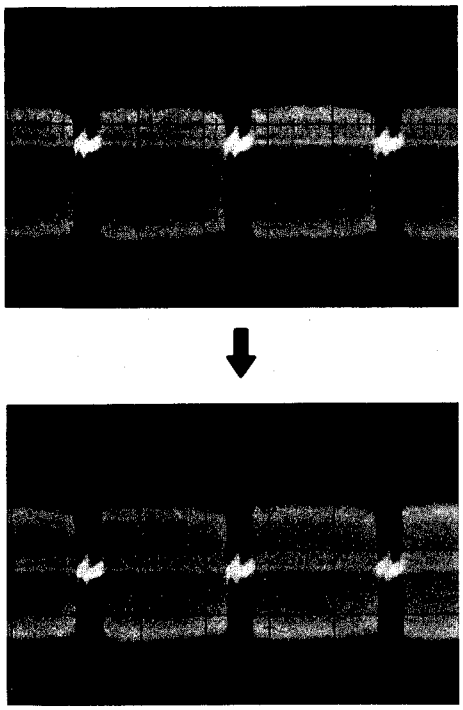


CR-21 board (component side)

3-6-6. Black Level Set Adjustment-I

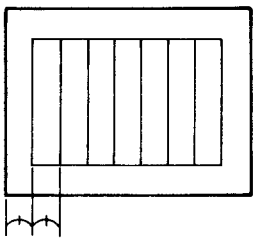
Lens : Close
Measuring equipment : Oscilloscope
To be measured : TP2 (GND: TP5)/PR-46 board
To be adjusted : ◐RV1/PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the ◐RV1/PR-46 board so that the H. BLKG is positioned in the center of video waveform.



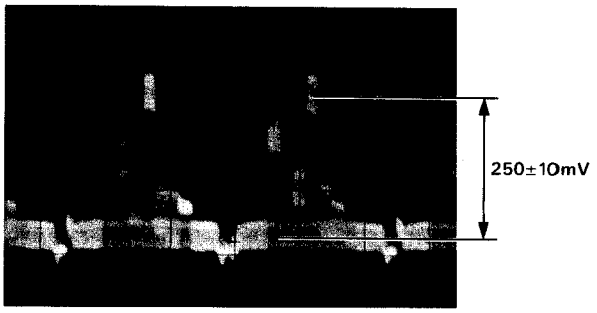
3-6-7. Gain Adjustment

Object : Color-bar pattern chart

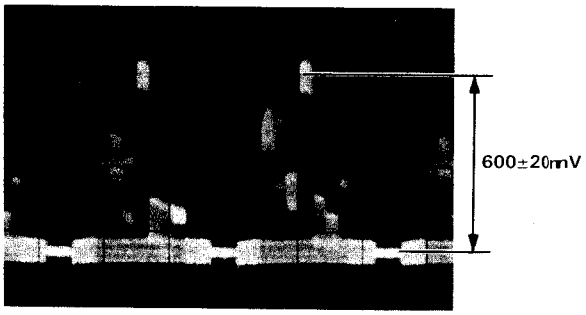


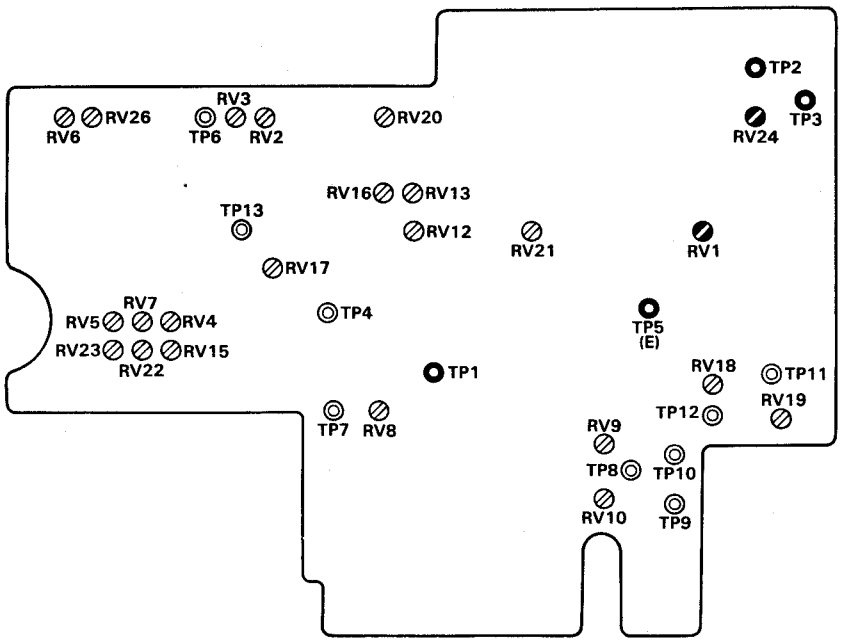
Measuring equipment : Oscilloscope
To be measured : TP1, TP3, (GND: TP5) /PR-46 board
To be adjusted : ◐RV24/PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250±10 mV.

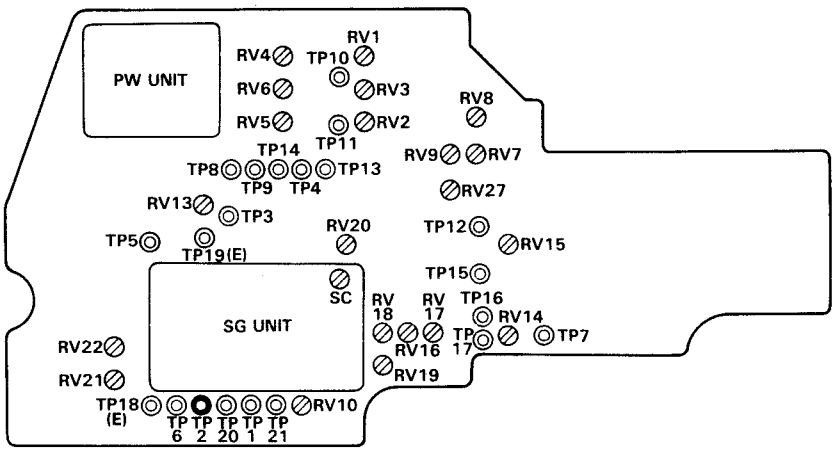


2. Adjust the ◐RV24/PR-46 board so that the white peak level at TP3/PR-46 board is 600±20 mV.





PR-46 board (component side)

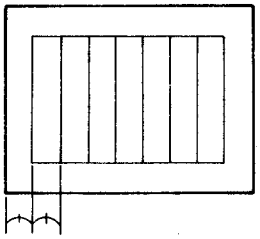


DF-21 board (component side)

3-6-8. AGC Adjustment

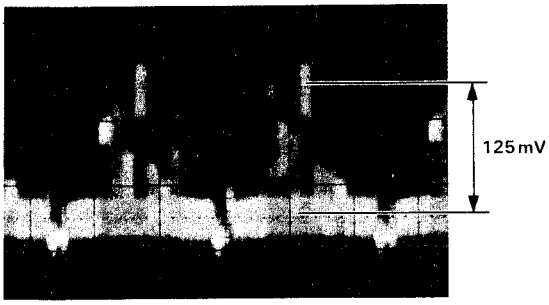
Note: Be sure to carry out 3-6-7. Gain Adjustment before this adjustment.

Object : Color-bar pattern chart

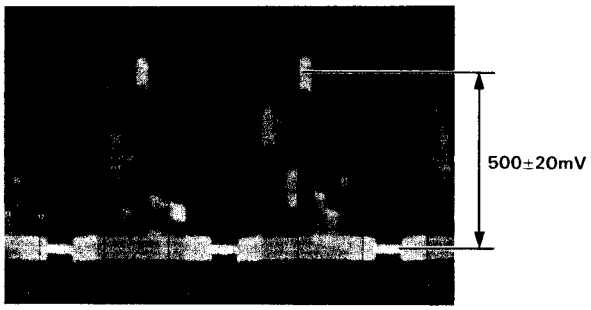


Measuring equipment : Oscilloscope
To be measured : TP1, TP3 (GND: TP5) } /PR-46 board
Preparation : GAIN switch → "AUTO"
◐RV12/PR-46 board → Fully turn clockwise ↻
To be adjusted : ◐RV21, ◐RV12 } /PR-46 board
Trigger : TP2 (HD)/DF-21 board

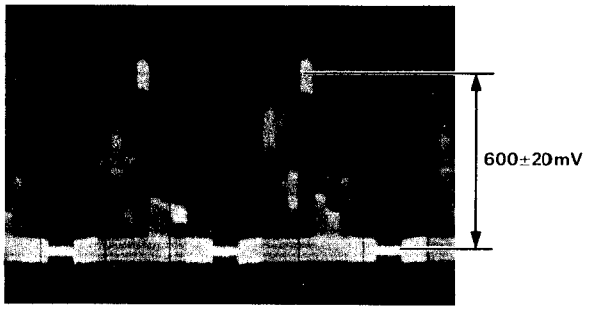
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 125 mV.



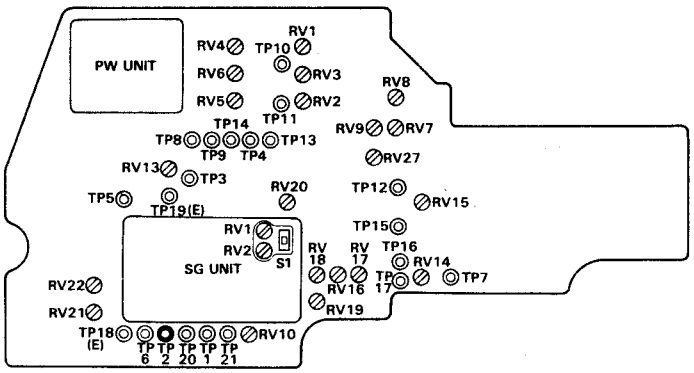
2. Adjust the ◐RV21/PR-46 board so that the white peak level at TP3/PR-46 board is 500±20 mV.



3. Adjust the lens iris so that the white peak level at TP1 is 250 mV.
4. Adjust the ◐RV12/PR-46 board so that the white level at TP3 is 600±20 mV.



Note: After this adjustment is completed, reset the GAIN switch at "0" position.

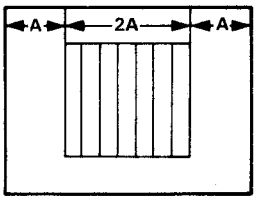


DF-21 board (component side)

3-6-9. H.F LIMIT Adjustment

Note: Be sure to carry out 3-6-8. AGC Adjustment before this adjustment.

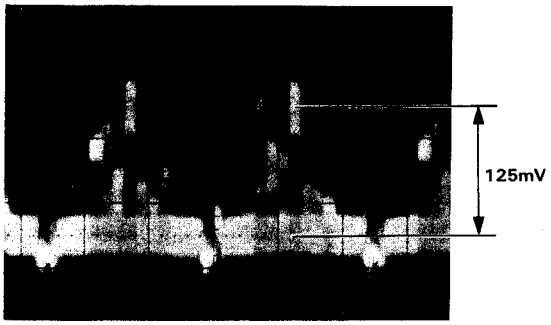
Object : Color-bar pattern chart

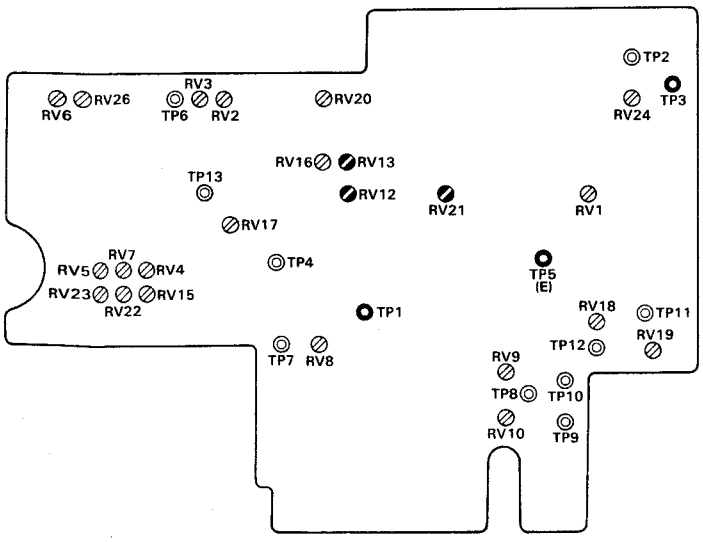


monitor
(reduced scan)

Preparation : GAIN switch →"AUTO"
Measuring equipment : Oscilloscope, Vectorscope
To be measured : TP1 (GND: TP5)/PR-46 board
To be adjusted : ◐RV13/PR-46 board
Trigger : TP2 (HD)/DF-21 board

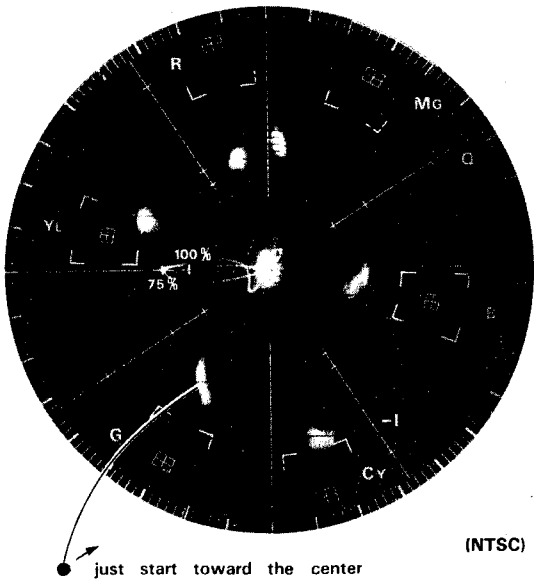
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 125 mV.



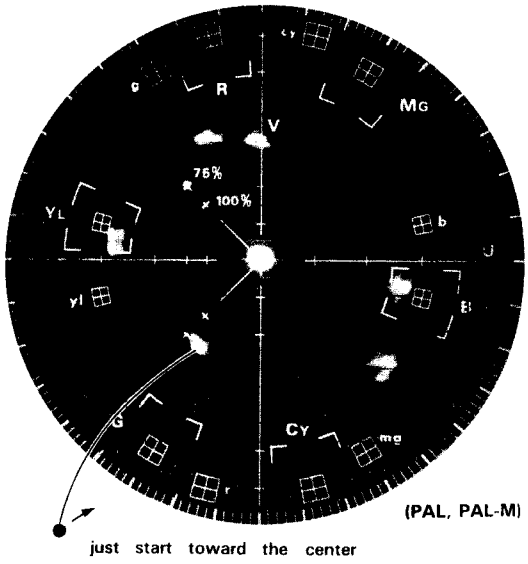


PR-46 board (component side)

2. Set the ◐RV13/PR-46 board at where the spots on the vectorscope just start toward the center of the scope.



(NTSC)

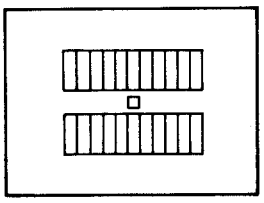


(PAL, PAL-M)

Note: After this adjustment is completed, reset the GAIN switch at "0" position.

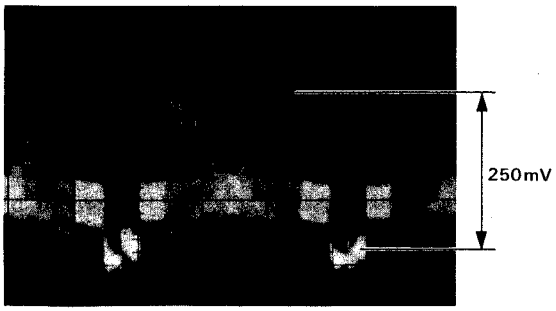
3-6-10. POSI Gamma Adjustment

Object : Grayscale chart

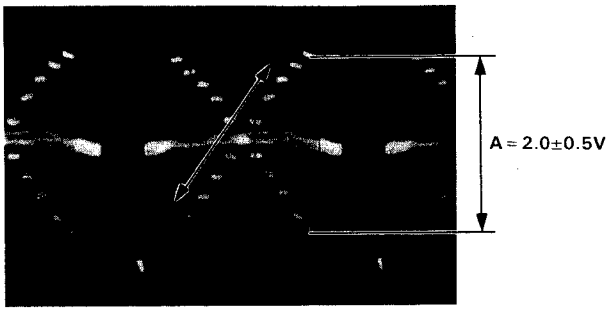


Measuring equipment : Oscilloscope
To be measured : TP1, TP7 (GND: TP5) /PR-46 board
Preparations : ◐RV3→Fully Clockwise, ◐RV6→Fully Clockwise, ◐RV26→Fully Clockwise, ◐RV4→Mechanical center /PR-46 board
To be adjusted : ◐RV6, ◐RV26, ◐RV4, ◐RV5 /PR-46 board
Trigger : TP2 (HD)/DF-21 board

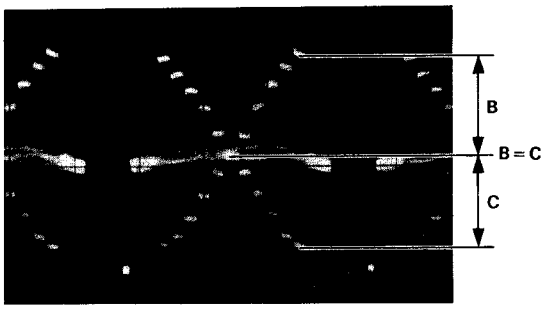
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



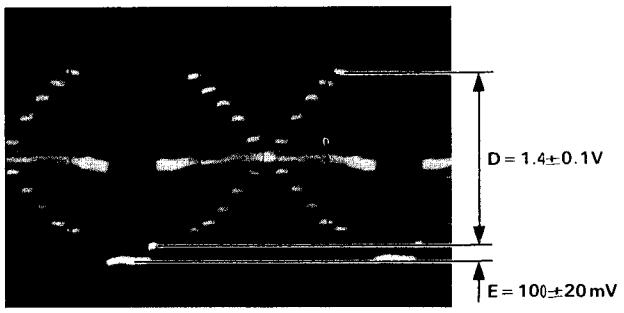
2. Adjust the ◐RV5/PR-46 board so that the video level corresponding to A at TP7/PR-46 broad is 2.0±0.5V.
3. Adjust the ◐RV4/PR-46 board so that the video waveform is straight.



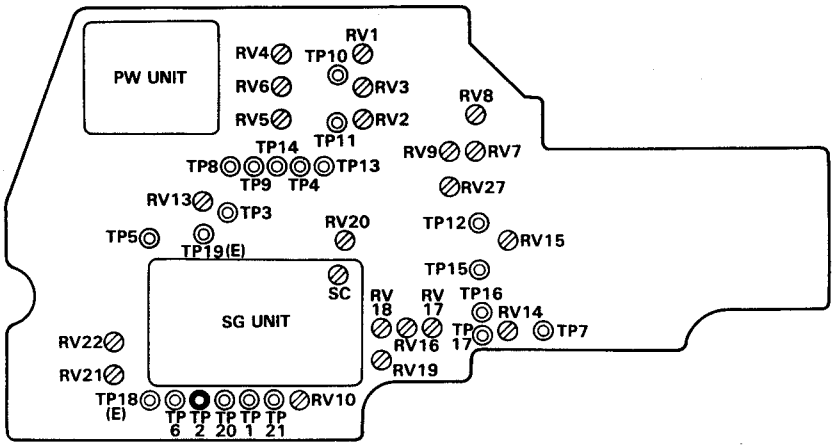
4. Repeat Step 2 and Step 3 several times so that both specifications are obtained.
5. Adjust the ◐RV5/PR-46 board so that the B is equal to C.



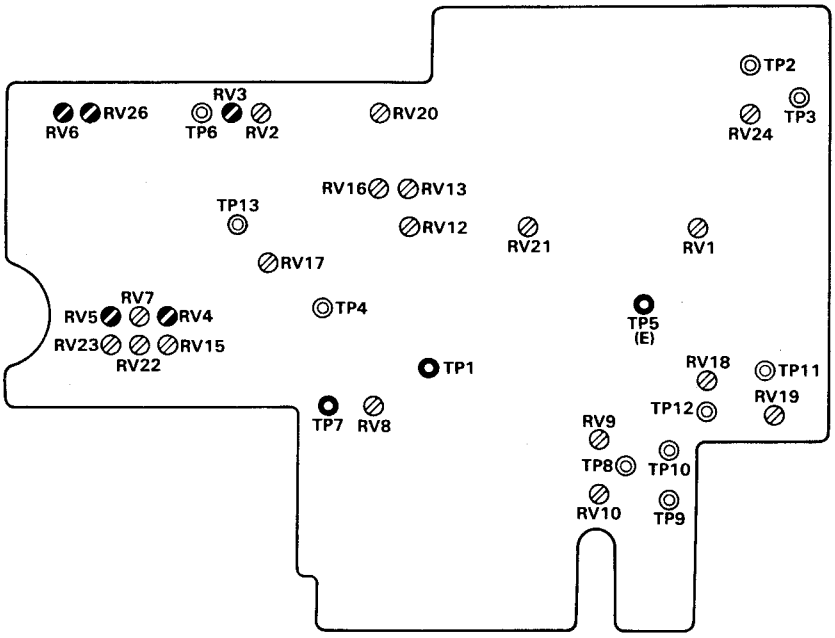
6. Adjust the ◐RV6/PR-46 board so that the video level corresponding to D is 1.4±0.1V, and adjust the ◐RV26/PR-46 board so that the video level corresponding to E is 100±20 mV.
Repeat the adjustment of ◐RV6 and ◐RV26 so that both specifications are obtained.



Note: Be sure to carry out 3-6-21. H. DTL Adjustment after this adjustment.



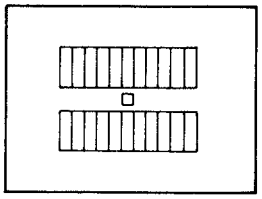
DF-21 board (component side)



PR-46 board (component side)

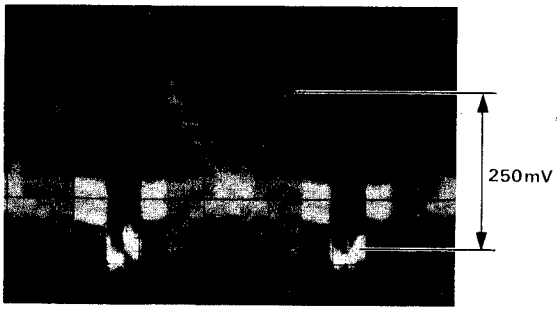
3-6-11. NEGA Gamma Adjustment

Object : Grayscale chart

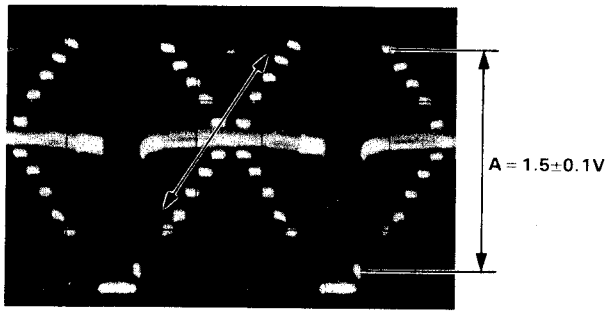


Measuring equipment : Oscilloscope
To be measured : TP1, TP7 (GND: TP5) } /PR-46 board
Preparations : NEGA/POSI switch→"NEGA"
◐RV15/PR-46 board→Mechanical center
To be adjusted : ◐RV23, ◐RV15 } /PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.

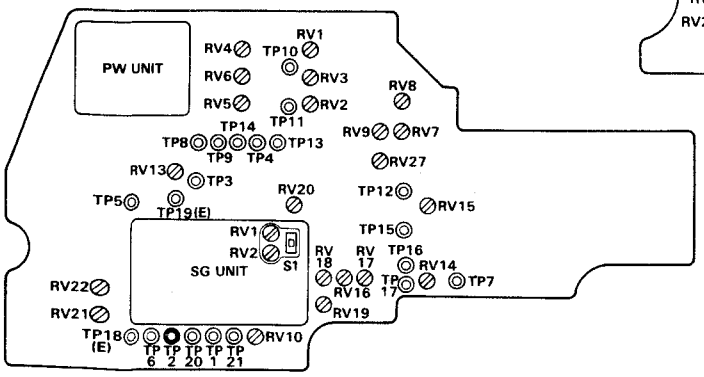


2. Adjust the ◐RV23/PR-46 board so that the video level corresponding to A at TP7/PR-46 broad is 1.5±0.1V.
3. Adjust the ◐RV15/PR-46 board so that the video waveform at TP7 is straight.

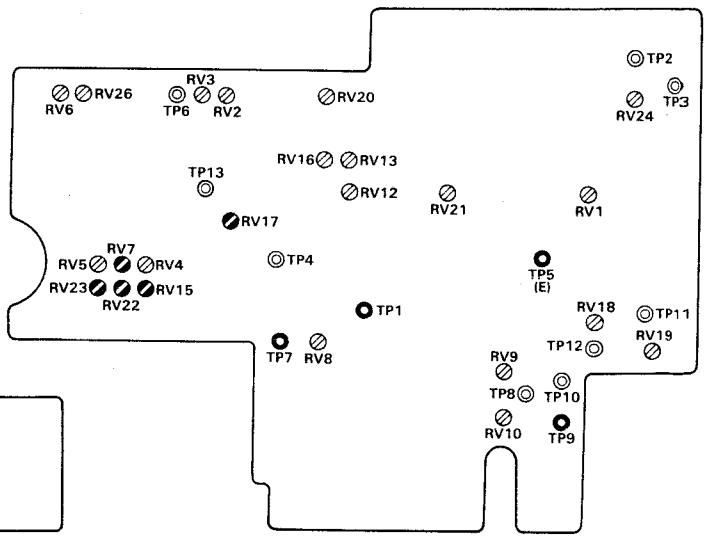


4. Repeat Step 2 and Step 3 several times so that both specifications are obtained.

Note: After this adjustment is completed, reset the NEGA/POSI switch at "POSI" position.



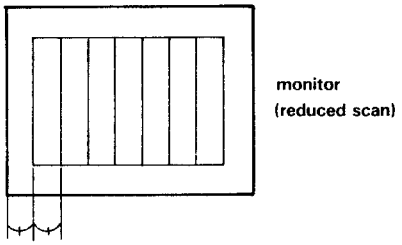
DF-21 board (component side)



PR-46 board (component side)

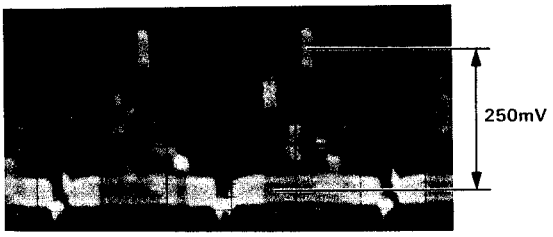
3-6-12. POSI Ys Adjustment

Object : Color-bar pattern chart

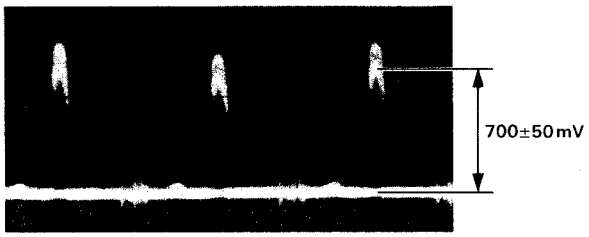


Measuring equipment : Oscilloscope
To be measured : TP1, TP9, (GND: TP5) } /PR-46 board
To be adjusted : ◐RV7/PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.

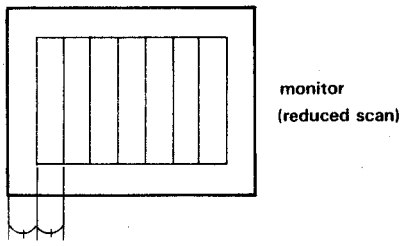


2. Turn the ◐RV7/PR-46 board fully counterclockwise ↺, and turn clockwise little by little so that the video level at TP9/PR-46 board becomes 700±50 mV.



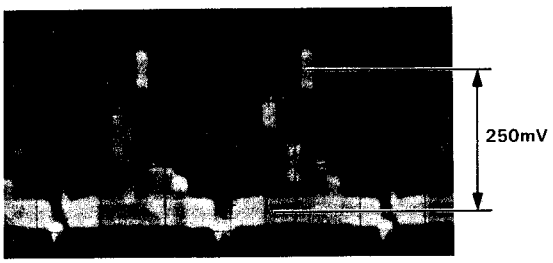
3-6-13. NEGA Ys Adjustment

Object : Color-bar pattern chart

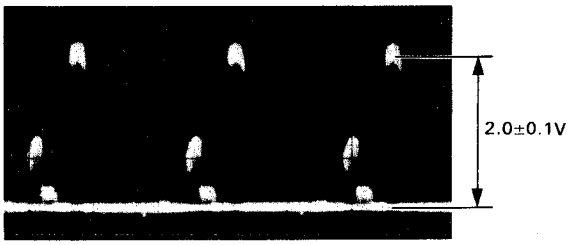


Measuring equipment : Oscilloscope
To be measured : TP1, TP9, (GND: TP5) } /PR-46 board
Preparations : ◐RV17/PR-46 board→Fully counterclockwise ↺
NEGA/POSI switch→"NEGA"
To be adjusted : ◐RV17, ◐RV22 } /PR-46 board
Trigger : TP2 (HD)/DF-21 board

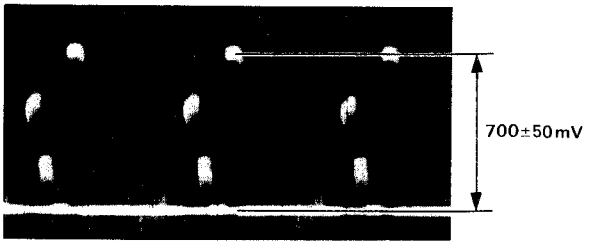
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



2. Adjust the ◐RV22/PR-46 board so that the video level at TP9/PR-46 board is 2.0±0.1V.



3. Adjust the ◐RV17/PR-46 board so that the video level at TP9 is 700±50 mV.

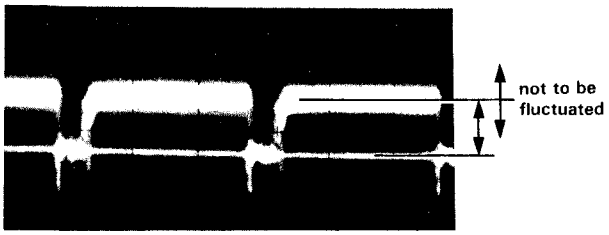


Note: After this adjustment is completed, reset the NEGA/POSI switch at "POSI" position.

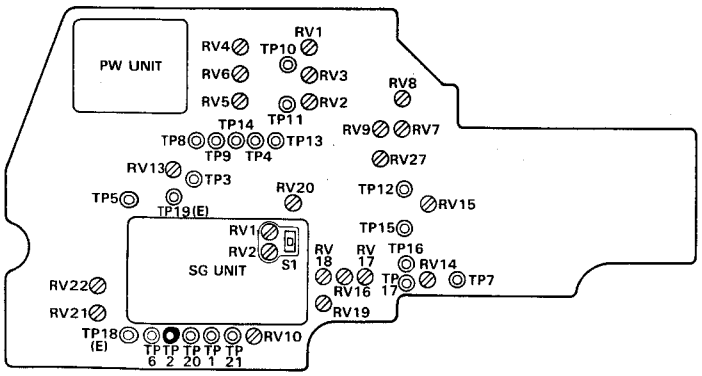
3-6-14. Black Level Set Adjustment-II

Lens : Close
Measuring equipment : Oscilloscope
To be measured : TP7/PR-46 board
To be adjusted : ◐RV1/PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the ◐RV1/PR-46 board so that the black level at TP7/PR-46 board does not change when the GAIN switch is changed over from 0dB to 6dB, 12dB and 18dB.



Note: After this adjustment is completed, reset the GAIN switch to 0dB.

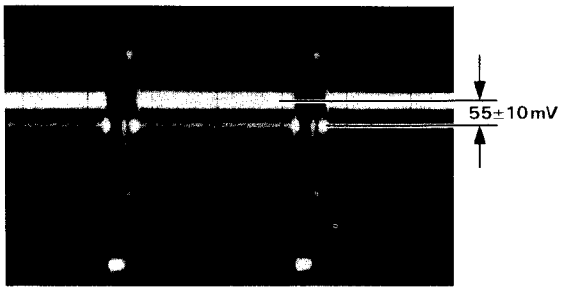


DF-21 board (component side)

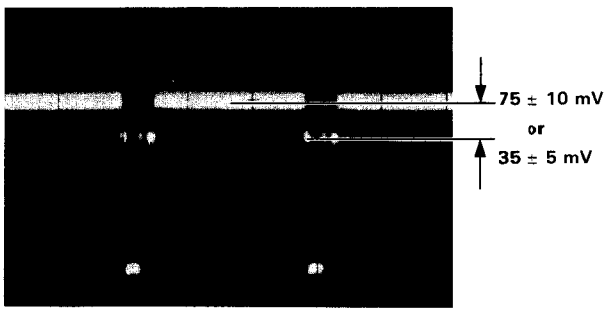
3-6-15. Setup Adjustment

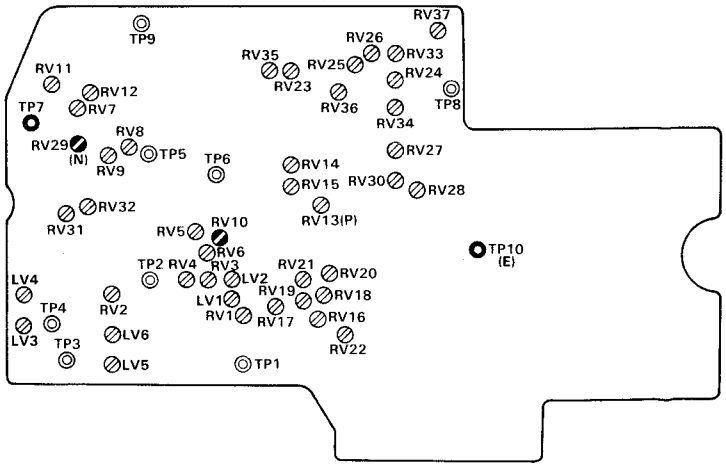
Lens : Close
Measuring equipment : Oscilloscope
To be measured : TP7 (GND: TP10)/CR-21 board
Preparation : ◐RV9/PR-46 board→Fully counterclockwise ↺
To be adjusted : ◐RV29/CR-21 board
◐RV9/PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. (NTSC and PAL-M only)
Adjust the ◐RV29/CR-21 board so that the setup level at TP7/CR-21 board is 53±10 mV.



2. Adjust the ◐RV9/PR-46 board so that the black level at TP7 is 75±10 mV for NTSC and PAL-M or 35±5 mV for PAL.



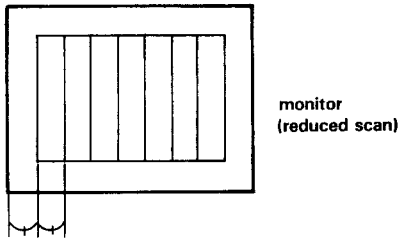


CR-21 board (component side)

3-6-16. Y. Level Adjustment

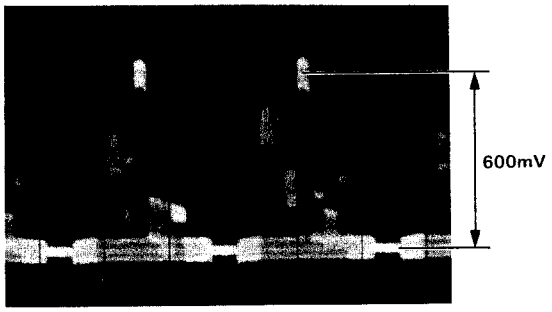
Note: Be sure to carry out 3-6-7. GAIN Adjustment before this adjustment.

Object : Color-bar pattern chart

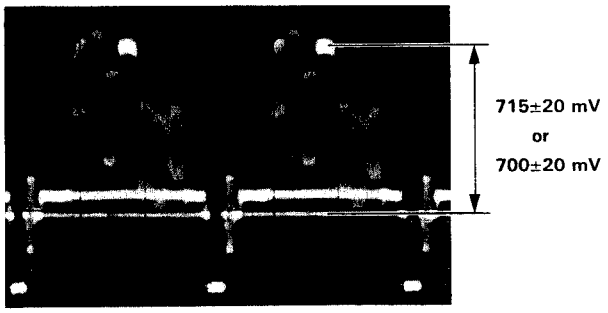


Measuring equipment : Oscilloscope
To be measured : TP7 (GND: TP10)/CR-21 board
To be adjusted : ◐RV10/CR-21 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP3/PR-46 board is 600 mV.



2. Adjust the ◐RV10/CR-21 board so that the white peak level at TP7/CR-21 board is 715±20 mV for NTSC or 700±20 mV for PAL and PAL-M.

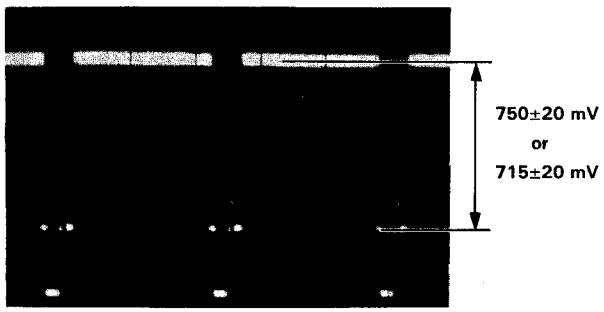


Note: Be sure to check if specification 2 defined in 3-6-15. Setup Adjustment is satisfied when the iris control is closed after adjustment is completed. Unless specification 2 is satisfied, repeat adjustment defined in 3-6-15. Setup Adjustment and 3-6-16. Y Level Adjustment alternately until specification 2 is satisfied.

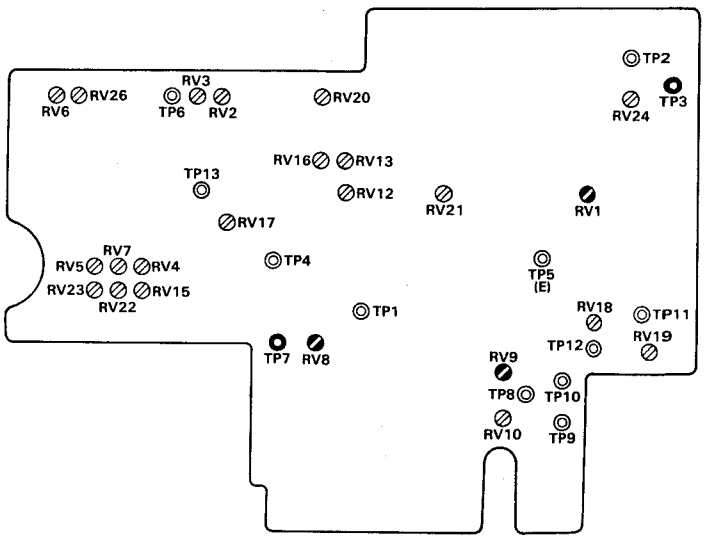
3-6-17. NEGA Setup Adjustment

Note: Be sure to carry out 3-6-16. Y Level Adjustment before this adjustment.

Lens : Close
Measuring equipment : Oscilloscope
To be measured : TP7 (GND: TP10)/CR-21 board
Preparation : NEGA/POSI switch→"NEGA"
To be adjusted : ◐RV8/PR-46 board
Trigger : TP2 (HD)/DF-21 board
Specification : 750±20 mV (NTSC, PAL-M)
715±20 mV (PAL)



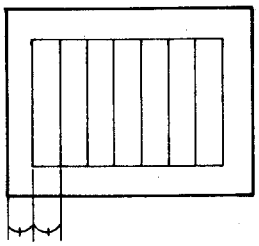
Note: After this adjustment is completed, reset the NEGA/POSI switch at "POSI" position.



PR-46 board (component side)

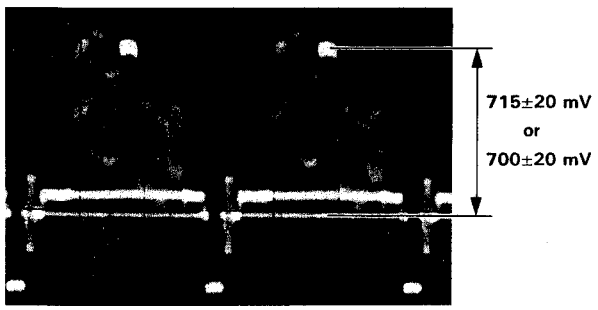
3-6-18. 14P Video Level Adjustment

Object : Color-bar pattern chart

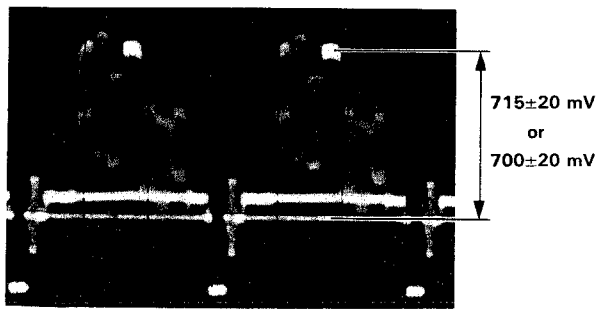


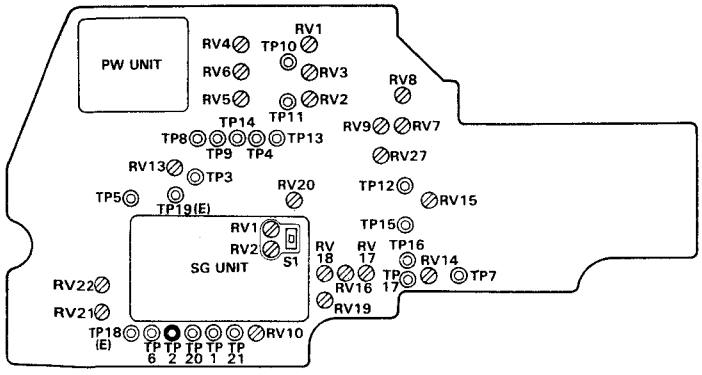
Measuring equipment : Oscilloscope
To be measured : TP9/CR-21 board
To be adjusted : ◐RV11/CR-21 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP7/CR-21 board is 715 mV for NTSC or 700 mV for PAL and PAL-M.



2. Adjust the ◐RV11/CR-21 board so that the white peak level at TP9/CR-21 board is 715±20 mV for NTSC or 700±20 mV for PAL and PAL-M.

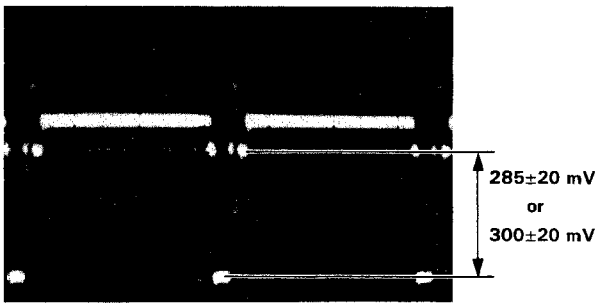


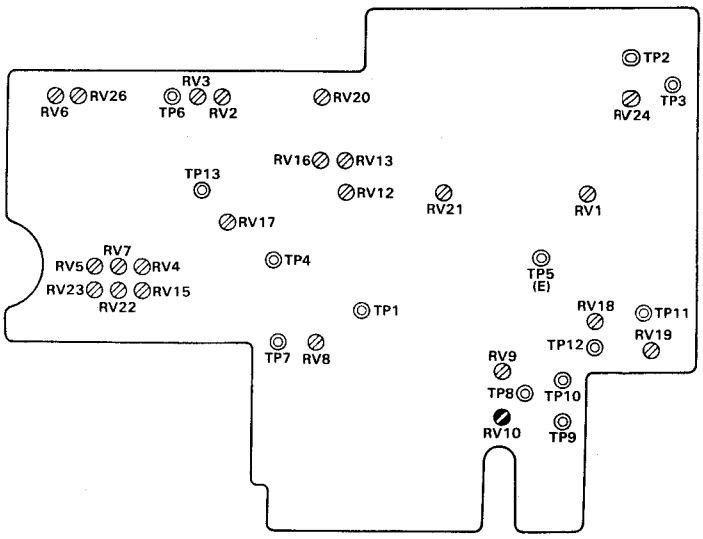


DF-21 board (component side)

3-6-19. Sync Level Adjustment

Lens : Close
Measuring equipment : Oscilloscope
To be measured : TP7 (GND: TP10)/CR-21 board
To be adjusted : ◐RV12/CR-21 board
Trigger : TP2 (HD)/DF-21 board
Specification : 285±20 mV (NTSC)
300±20 mV (PAL, PAL-M)

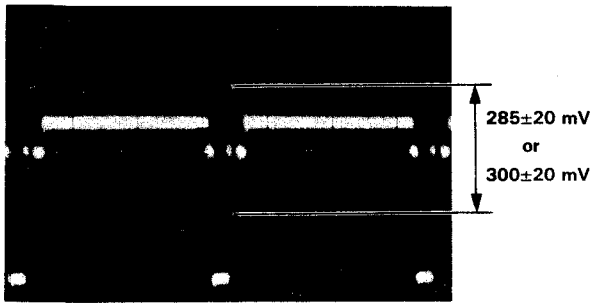




PR-46 board (component side)

3-6-20. Burst Level Adjustment

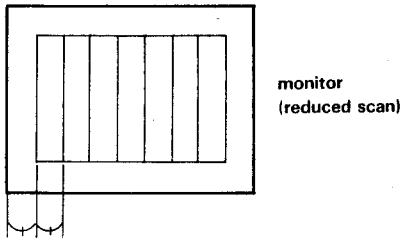
Lens	:	Close
Measuring equipment	:	Oscilloscope
To be measured	:	TP7 (GND: TP10)/CR-21 board
To be adjusted	:	◐RV7/CR-21 board
Trigger	:	TP2 (HD)/DF-21 board
Specification	:	285±20 mV (NTSC) 300±20 mV (PAL, PAL-M)



3-6-21. White Clip Adjustment

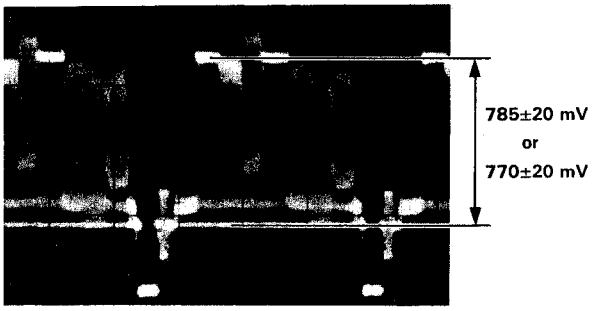
Note: Be sure to carry out 3-6-15. Y Level Adjustment before this adjustment.

Object : Color-bar pattern chart

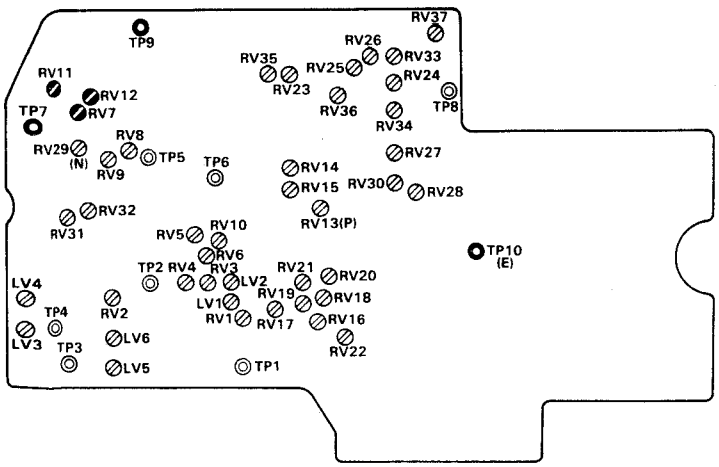


Lens	:	F4
Measuring equipment	:	Oscilloscope
Preparation	:	GAIN switch→"6 dB"
To be measured	:	TP7 (GND: TP10)/CR-21 board
To be adjusted	:	◐RV10/PR-46 board
Trigger	:	TP2 (HD)/DF-21 board

1. Adjust the ◐RV10/PR-46 board so that the white peak level at TP7/CR-21 board is 785±20 mV for NTSC or 770±20 mV for PAL and PAL-M.



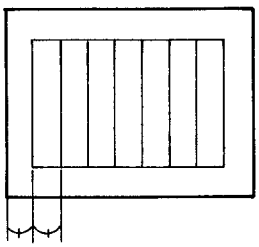
Note: After this adjustment is completed, reset the GAIN switch at "0" position.



CR-21 board (component side)

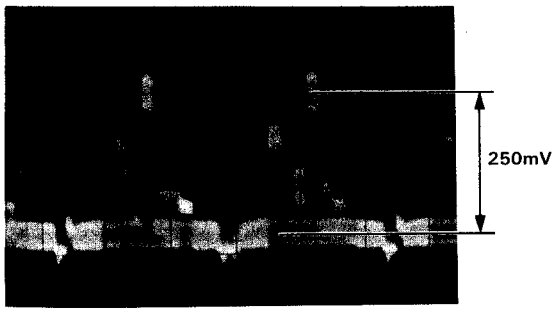
3-6-22. H. DTL Adjustment

Object : Color-bar pattern chart

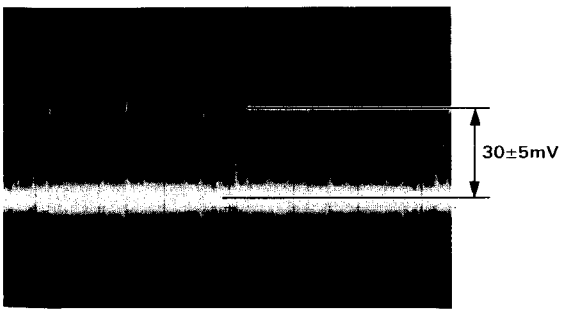


Measuring equipment : Oscilloscope
To be measured : TP13, TP7 (GND: TP10) } /CR-21 board
To be adjusted : ◐RV2, ◐RV3 } /PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.

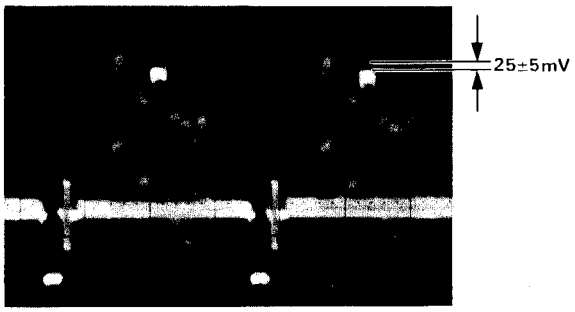


2. Adjust the lens focus so that the waveform at TP13/PR-46 board becomes maximum, and then adjust the ◐RV2/PR-46 board so that the signal level is 30±5 mV.

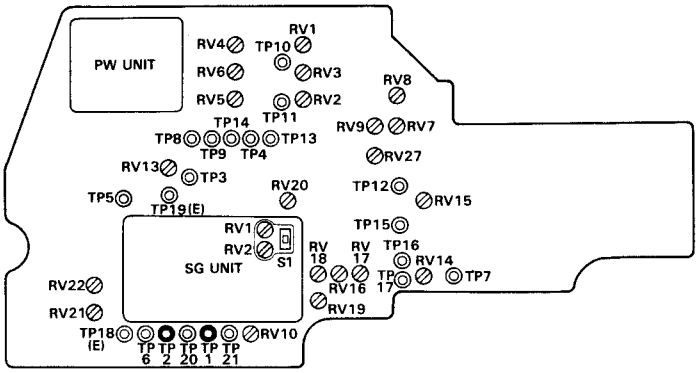


3. Accomplish automatic white balancing.

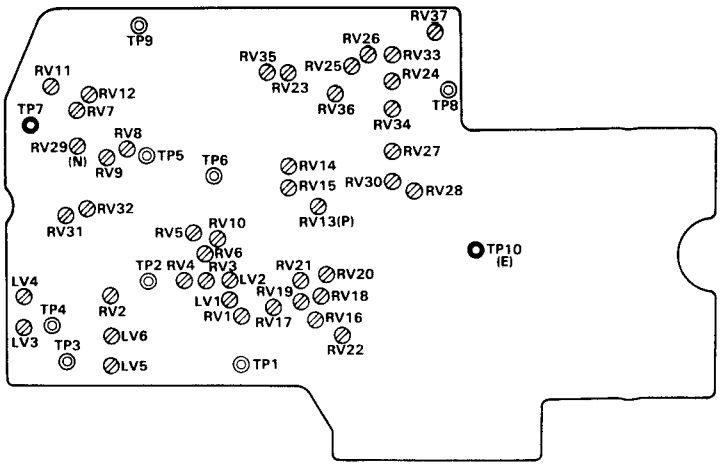
4. Adjust the ◐RV3/PR-46 board so that the H. detail level on the video waveform at TP7/CR-21 board is 25±5 mV.



Note: Be sure to perform adjustment of the H. DTL level in accordance with the user's requirement because the above H. DTL level is defined only as a typical value.



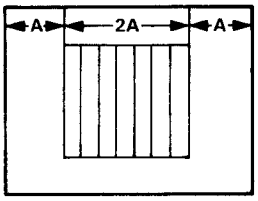
DF-21 board (component side)



CR-21 board (component side)

3-6-23. V. DTL Adjustment

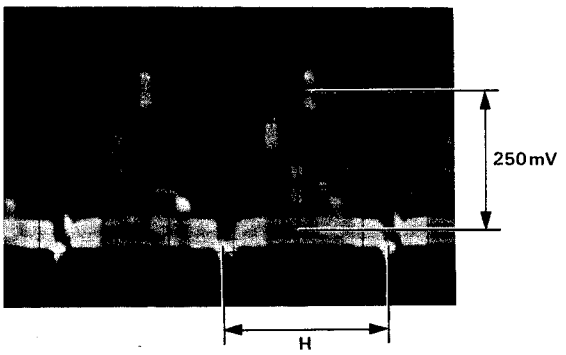
Object : Color-bar pattern chart



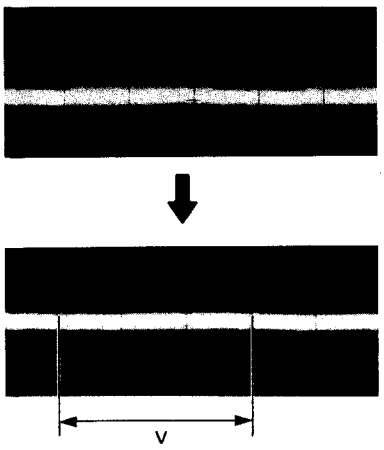
monitor
(reduced scan)

Measuring equipment : Oscilloscope
To be measured : V. DTL OUT terminal/VE-5 board
TP7 (GND: TP10)/CR-21 board
Preparation : Take off the lid of shield case for VE-5 board
To be adjusted : ◐RV1/VE-5 board
◐RV20/PR-46 board
Trigger : TP2 (HD), TP1 (VD) } /DF-21 board

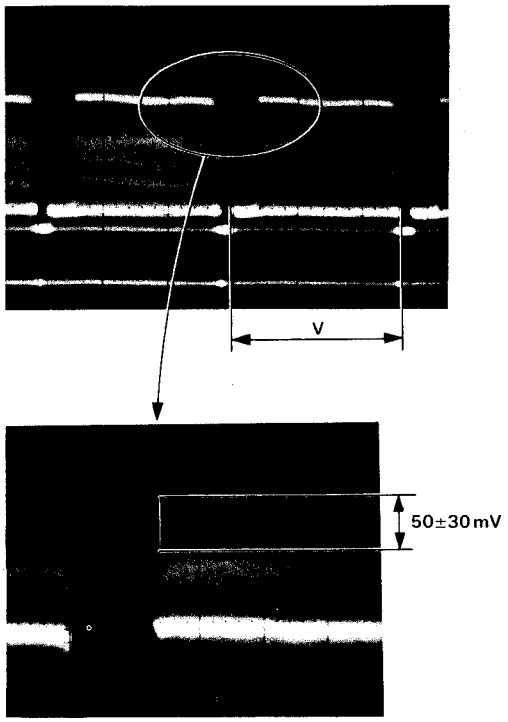
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



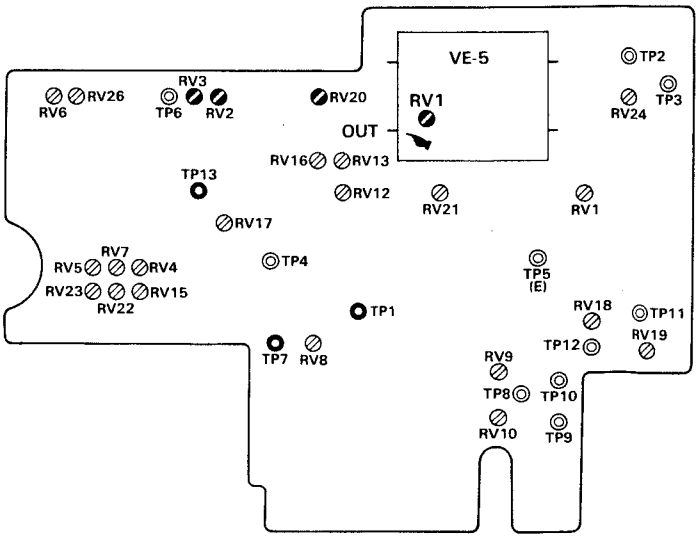
2. Adjust the ◐RV1/VE-5 board so that the signal waveform at V. DTL OUT terminal/VE-5 board becomes disappeared.



3. Adjust the ◐RV20/PR-46 board so that the V. detail signal level on the video waveform at TP7/CR-21 board is 50±30 mV.



Note: Be sure to perform adjustment of the V. DTL level in accordance with the user's requirement because the above V. DTL level is defined only as a typical value.

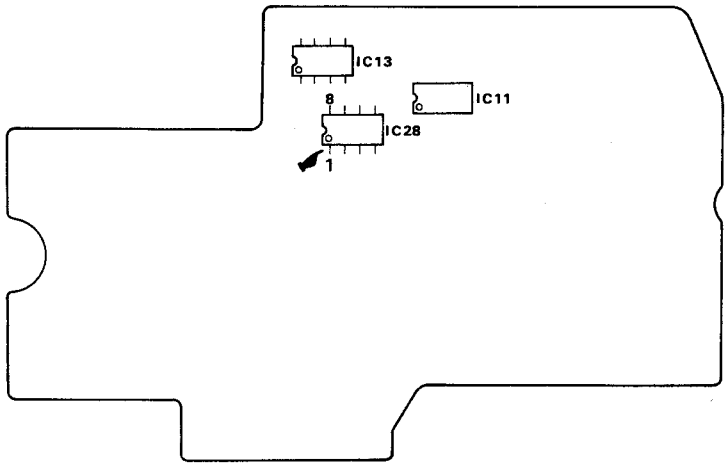


PR-46 board (component side)

3-6-24. MANUAL Iris Adjustment-I

Lens : Close
Measuring equipment : Oscilloscope or digital voltmeter
To be measured : Pin 1 of IC28/CR-21 board
To be adjusted : ◐RV27/CR-21 board
Specification : 4.7±0.4 V dc

Note: Be sure not to contact the probe to the other pins than pin 1 of IC28 while contacting the probe to pin 1 of IC28.

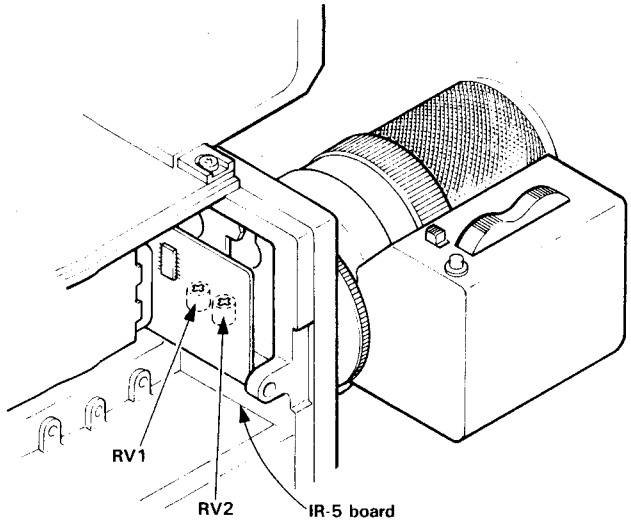


CR-21 board (soldering side)

Note: Be sure to perform manual iris adjustment II after completion of manual iris adjustment I for DXC-1821 and DXC-1821P.

○MANUAL Iris Adjustment-II

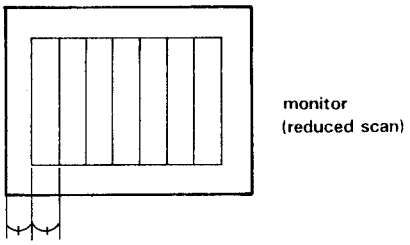
Lens : Close
Measuring equipment : Oscilloscope or digital voltmeter
To be measured : Pin 14 of IC1/IR-5 board
To be adjusted : ◐RV1/IR-5 board
Specification : 4.5±0.5 V dc



3-6-25. POSI Auto Iris Adjustment

Note: Be sure to carry out 3-6-7. GAIN Adjustment before this adjustment

Object : Color-bar pattern chart

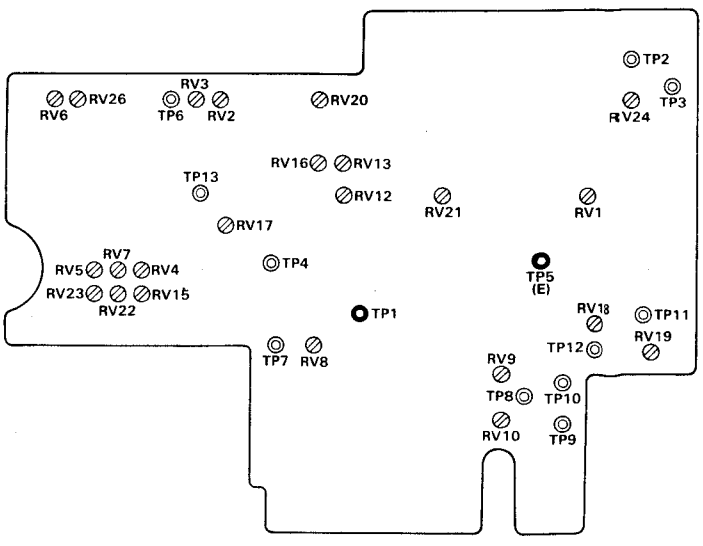


Measuring equipment : Oscilloscope
To be measured : TP1 (GND: TP5)/PR-46 board
Preparation : Lens iris→"AUTO"
To be adjusted : ◐RV30/CR-21 board
or
◐RV2/IR-5 board
Trigger : TP2 (HD)/DF-21 board

○For DXC-1820/1820P/1820PM
Adjust the ◐RV30/CR-21 board so that the white peak level at TP1/PR-46 board is 250±20 mV.

○For DXC-1821/1821P
Adjust the ◐RV2/IR-5 board so that the white peak level at TP1/PR-46 board is 250±20 mV.

Note: After this adjustment is completed, reset the lens iris control at "MANU" position.

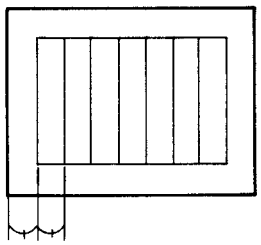


PR-46 board (component side)

3-6-26. NEGA Auto Iris Adjustment

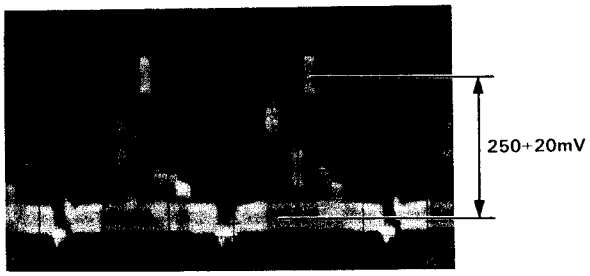
Note: Be sure to carry out 3-6-7. GAIN Adjustment before this adjustment

Object : Color-bar pattern chart

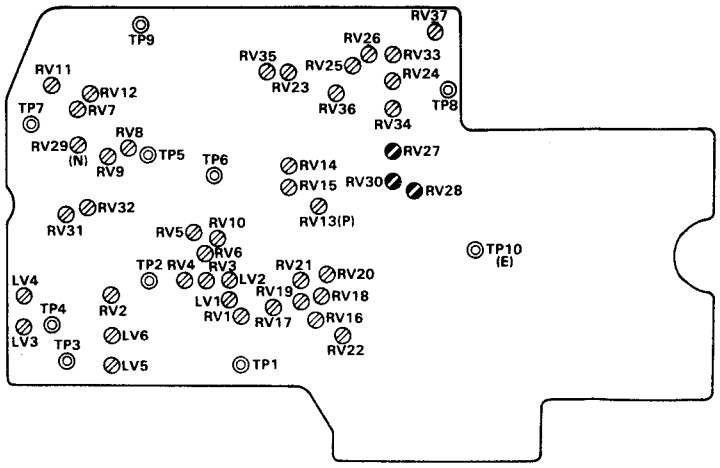


Measuring equipment : Oscilloscope
To be measured : TP1 (GND: TP5)/PR-46 board
Preparations : Lens iris→"AUTO"
NEGA/POSI switch→"NEGA"
To be adjusted : ◐RV28/CR-21 board
Trigger : TP2 (HD)/DF-21 board

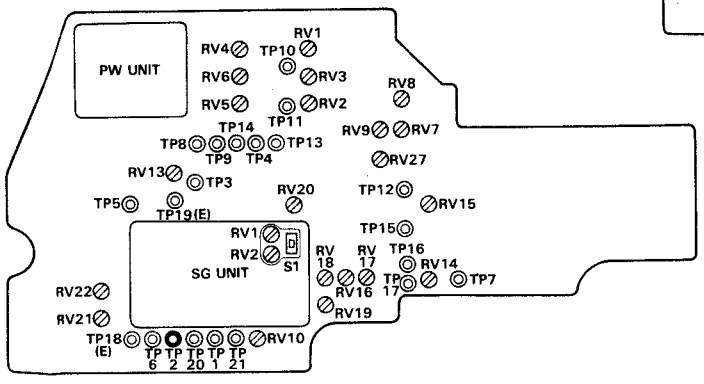
1. Adjust the ◐RV28/CR-21 board so that the white peak level at TP1/PR-46 board is 250±20 mV.



Note: After this adjustment is completed, reset the lens iris and NEGA/POSI switch at "MANU" and "POSI" position, respectively.



CR-21 board (component side)

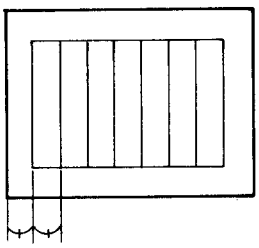


DF-21 board (component side)

3-6-27. Low Video Set Adjustment

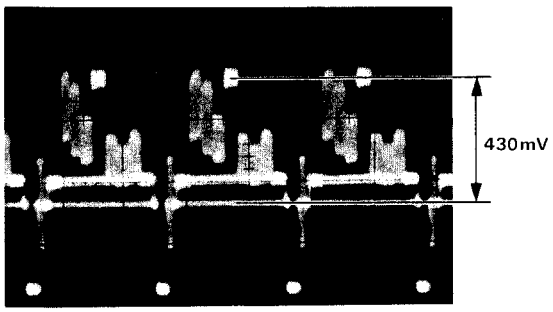
Note: Be sure to carry out 3-6-15. Y Level Adjustment before this adjustment.

Object : Color-bar pattern chart



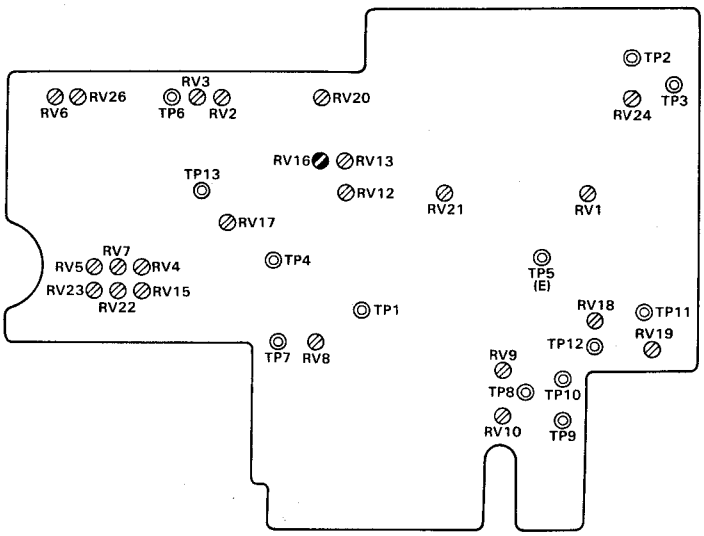
Measuring equipment : Oscilloscope
To be measured : TP7 (GND: TP10)/CR-21 board
To be adjusted : ◐RV16/PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP7/CR-21 board is 430 mV.



〔Serial NO. 10001 to 10180: DXC-1820
10001 to 10300: DXC-1820P〕

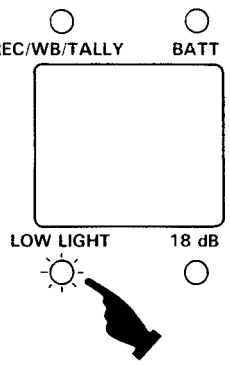
2. Fully turn ◐RV16/PR-46 board counterclockwise and gradually turn it clockwise until "LOW LIGHT" LED within the view finder lights.



PR-46 board (component side)

〔Serial NO. 10181 and higher: DXC-1820
50001 and higher: DXC-1821
10301 and higher: DXC-1820P
50001 and higher: DXC-1821P
10001 and higher: DXC-1820PM〕

2. Fully turn ◐RV16/PR-46 board counterclockwise and gradually turn it clockwise until "LOW LIGHT" LED within the view finder lights.

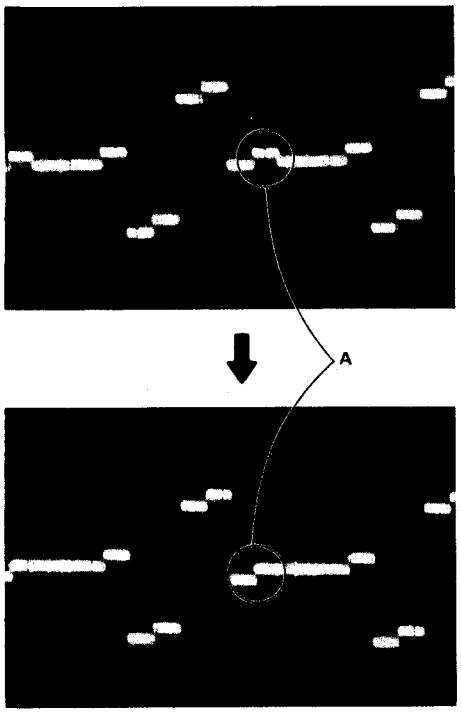


3-7. CHROMA SYSTEM

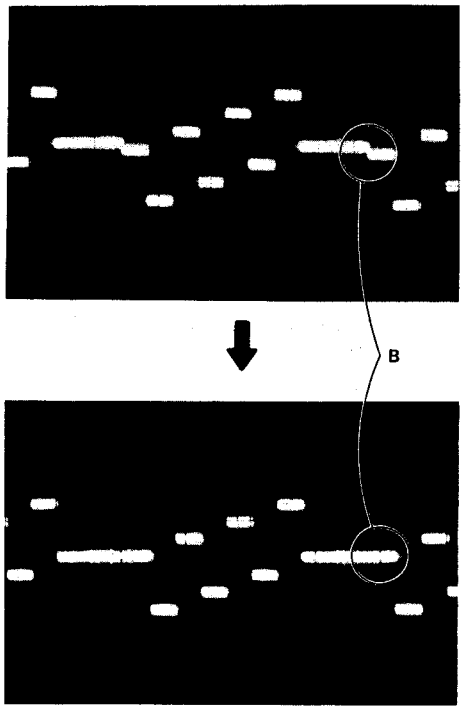
3-7-1. Color-bar White Balance Adjustment

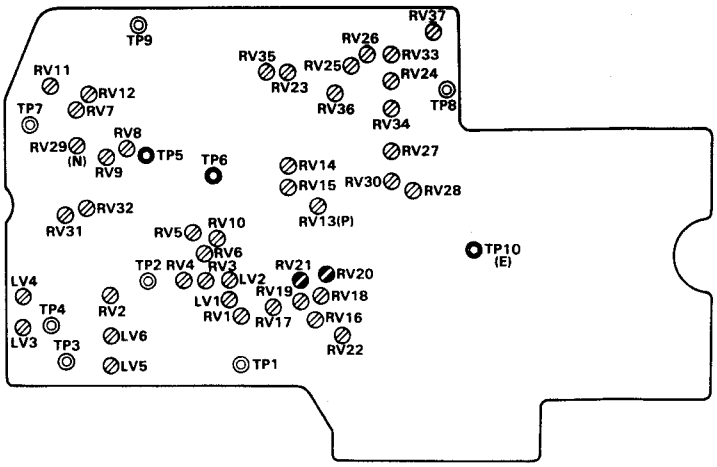
Measuring equipment : Oscilloscope
Preparation : BARS/CAMERA switch→"BARS"
To be adjusted : TP5 (R-Y), TP6 (B-Y), (GND: TP10) } /CR-21 board
To be adjusted : ◐RV21 (R-Y), ◐RV20 (B-Y) } /CR-21 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the ◐RV21/CR-21 board so that the portion A on signal waveform at TP5/PR-46 board becomes flat.

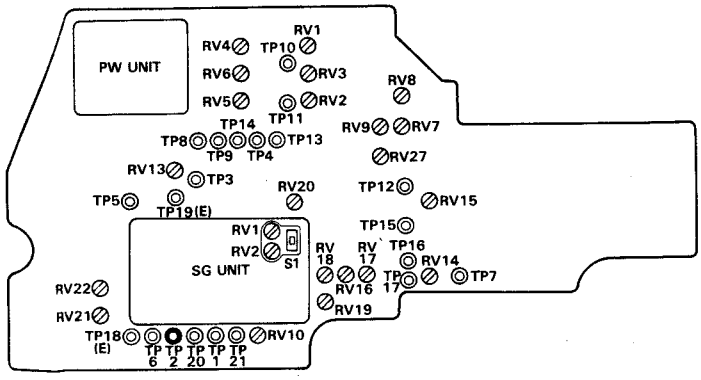


2. Adjust the ◐RV20/CR-21 board so that the portion B on signal waveform at TP6/CR-21 board becomes flat.





CR-21 board (component side)

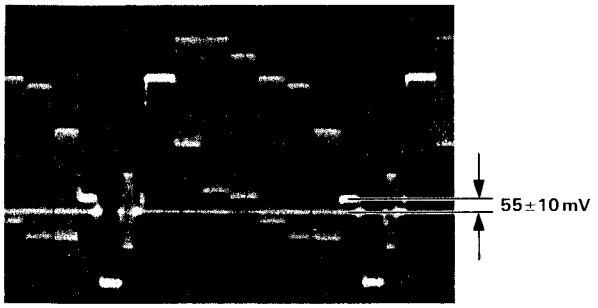


DF-21 board (component side)

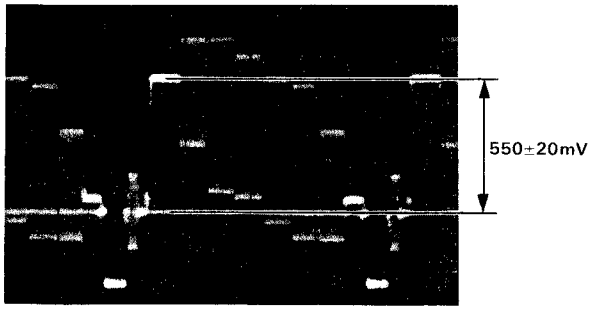
3-7-2. Color-bar Y Level Adjustment (For NTSC)

Measuring equipment : Oscilloscope
Preparation : BARS/CAMERA switch→"BARS"
To be measured : TP7 (GND: TP10)/CR-21 board
To be adjusted : ◐RV29, ◐RV22 /CR-21 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the ◐RV29/CR-21 board so that the setup level at TP7/CR-21 board is 55±10 mV.



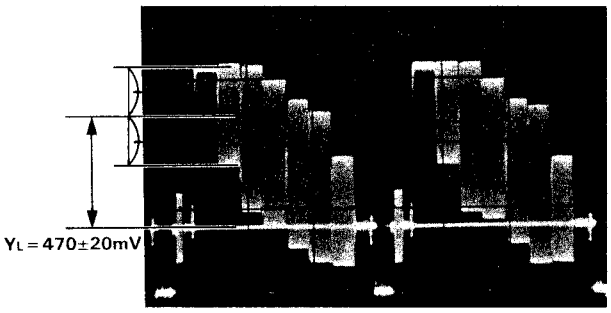
2. Adjust the ◐RV22/CR-21 board so that the white peak level is 550±20 mV.



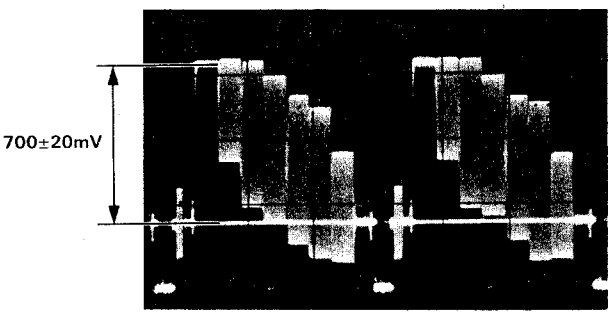
3-7-2. Color-bar Y Level Adjustment (For PAL and PAL-M)

Measuring equipment : Oscilloscope
Preparation : BARS/CAMERA switch→"BARS"
To be measured : TP7 (GND: TP10)/CR-21 board
To be adjusted : ◐RV17, ◐RV22 /CR-21 board
Trigger : TP2 (HD)/DF-21 board

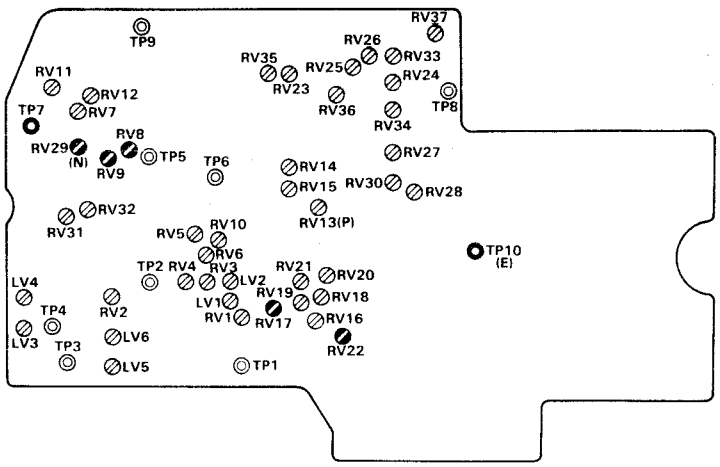
1. Adjust the ◐RV22/CR-21 board so that the Y_L level at TP7/CR-21 board is 470±20 mV.



2. Adjust the ◐RV17/CR-21 board so that the white peak level at TP7 is 700±20 mV.



3. Repeat Step 1 and Step 2 several times so that both specifications are obtained.

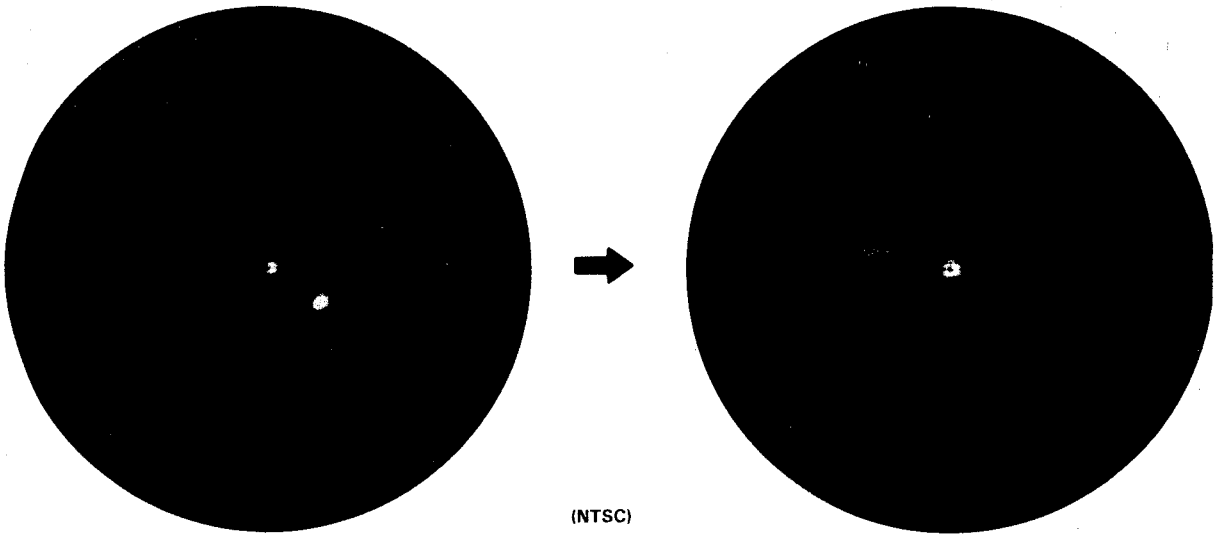


CR-21 board (component side)

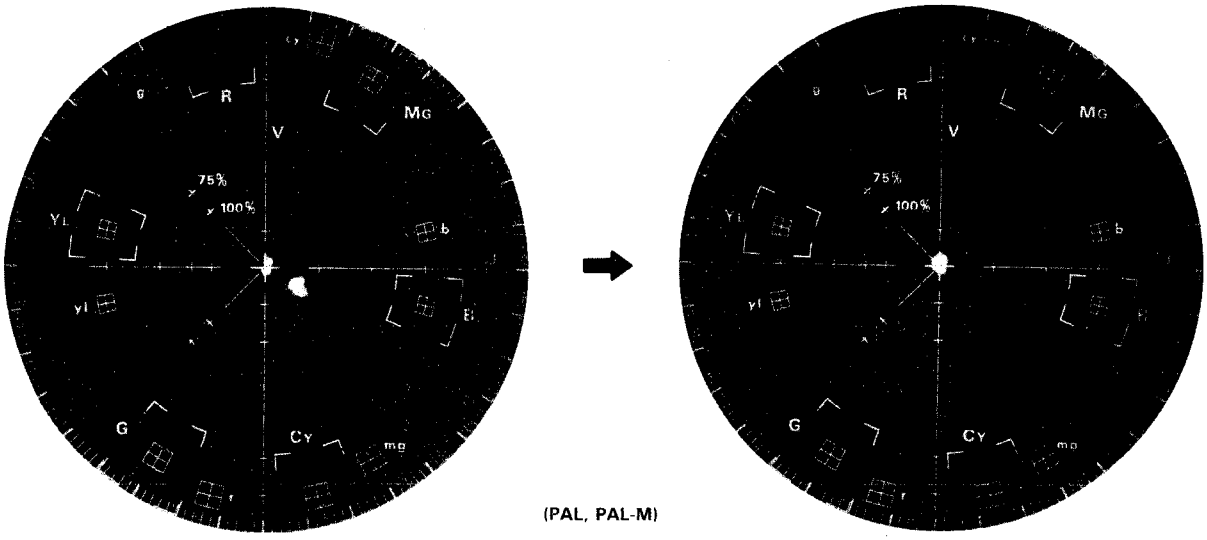
3-7-3. Color-bar Carrier Balance Adjustment

Measuring equipment : Vectorscope (MAX GAIN)
Preparation : BARS/CAMERA switch→"BARS"
To be adjusted : ◐RV8, ◐RV9 } /CR-21 board

1. Center the beam spot on the vectorscope using both ◐RV8 and ◐RV9/CR-21 board.

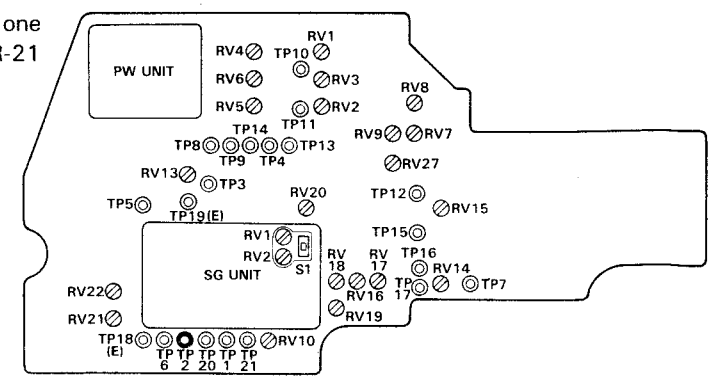


(NTSC)



(PAL, PAL-M)

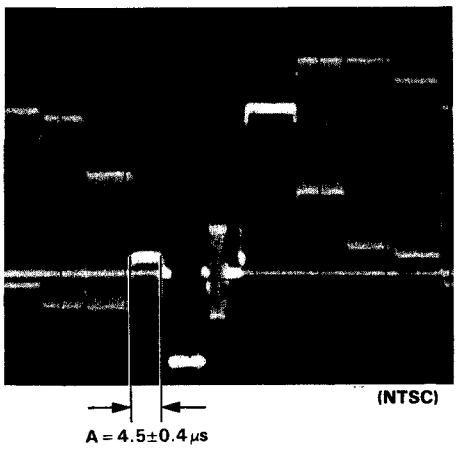
Note: If two bright spots can move, collect them at one position by using both ◐RV20 and ◐RV21/CR-21 board, and then perform this adjustment.

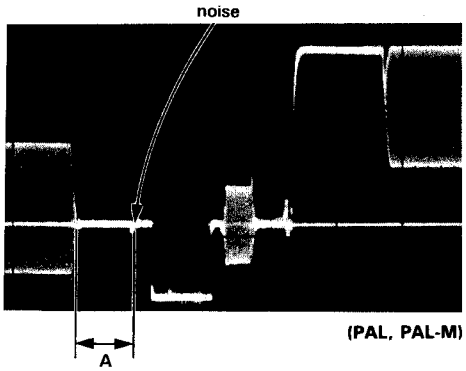


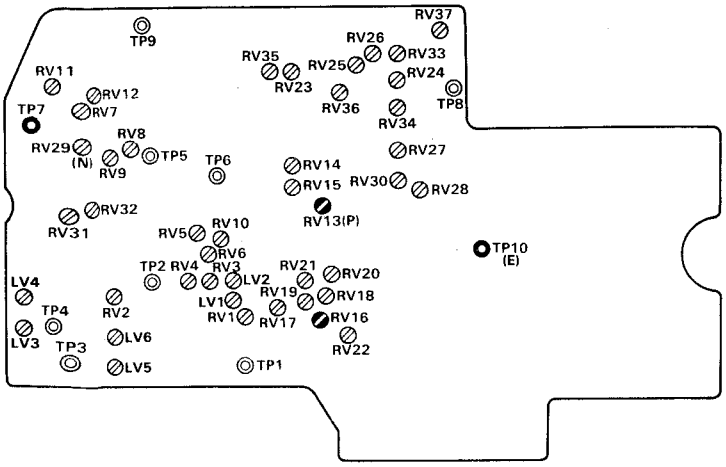
DF-21 board (component side)

3-7-4. Color-bar Width Adjustment

Measuring equipment : Oscilloscope
Preparation : BARS/CAMERA switch→"BARS"
To be measured : TP7 (GND: TP10)/CR-21 board
To be adjusted : ◐RV16/CR-21 board
Trigger : TP2 (HD)/DF-21 board
Specification : A = 4.5±0.4 μs





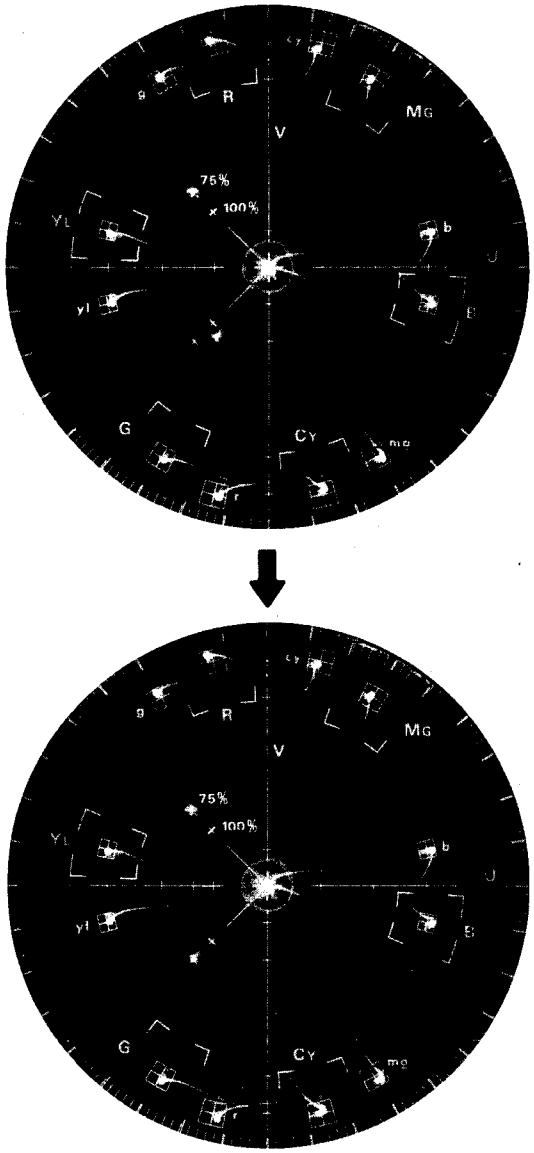


CR-21 board (component side)

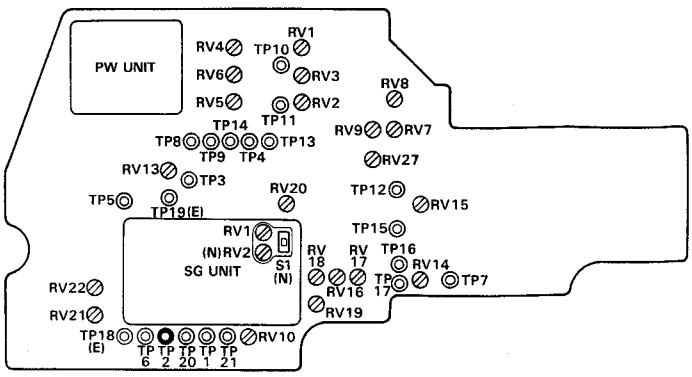
3-7-5. Burst Phase Adjustment (Only for PAL and PAL-M)

Measuring equipment : Vectorscope
Preparation : BARS/CAMERA switch→"BARS"
To be adjusted : ◐RV13/CR-21 board

1. Adjust the ◐RV13/CR-21 board so that the bursts intersect directly.



Note: After this adjustment is completed, be sure to carry out 3-6-20. Burst Level Adjustment.

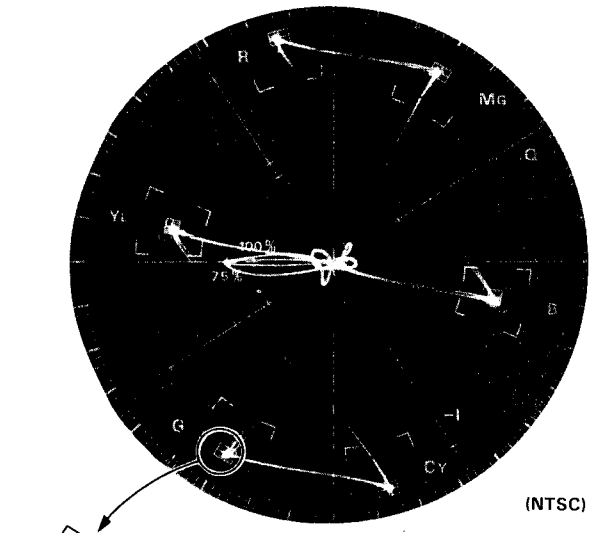


DF-21 board (component side)

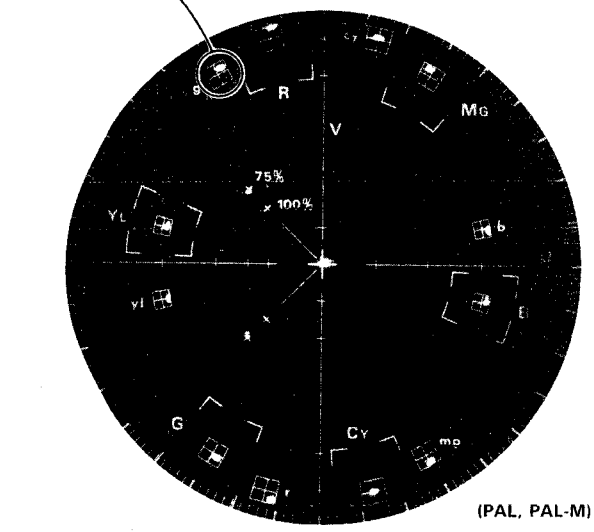
3-7-6. Color-bar Vector Adjustment

Note: Be sure to carry out 3-6-20. Burst Level Adjustment and 3-7-5. Burst Phase Adjustment before this adjustment.

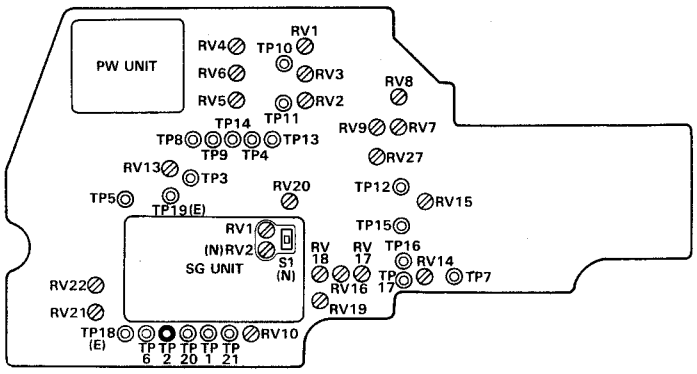
Measuring equipment : Vectorscope
Preparation : BARS/CAMERA switch→"BARS"
To be adjusted : ◐RV14, ◐RV15, ◐RV18, ◐RV19 /CR-21 board
Specification : At least one half of the bright spots in number should be located within the specified scale.



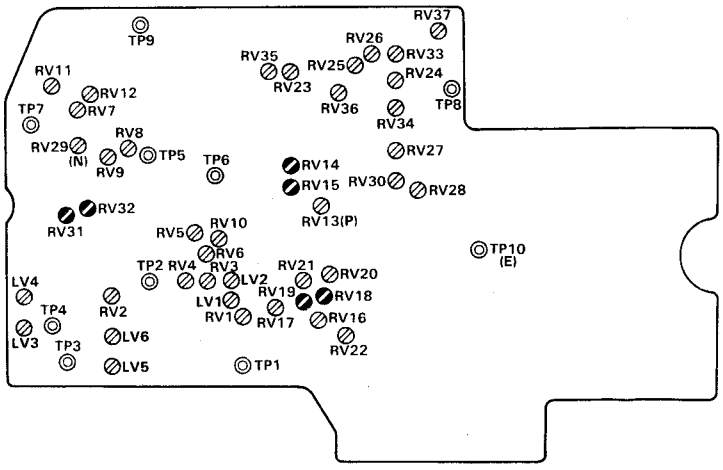
(NTSC)



(PAL, PAL-M)



DF-21 board (component side)



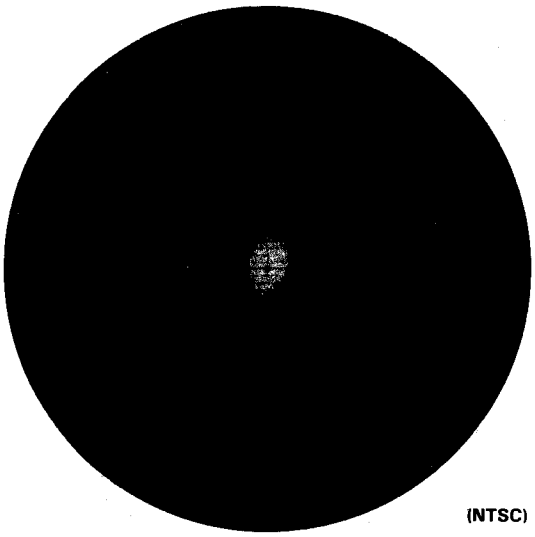
CR-21 board (component side)

Note: After this adjustment is completed, reset the BARS/CAMERA switch at "CAMERA" position.

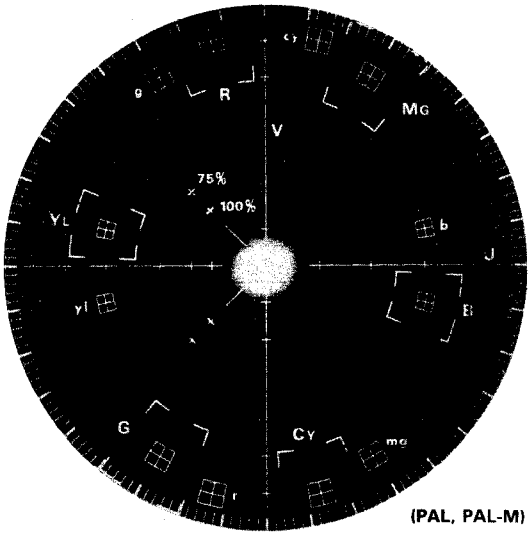
3-7-7. Carrier Balance Adjustment

Lens : Close
Measuring equipment : Vectorscope (MAX GAIN)
To be adjusted : ◐RV31, ◐RV32 } /CR-21 board

1. Adjust the ◐RV31 and ◐RV32/CR-21 board so that the beam spot is in the center of the vectorescope.



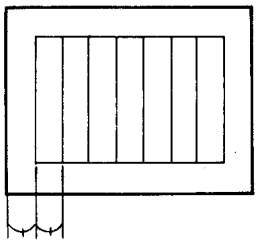
(NTSC)



(PAL, PAL-M)

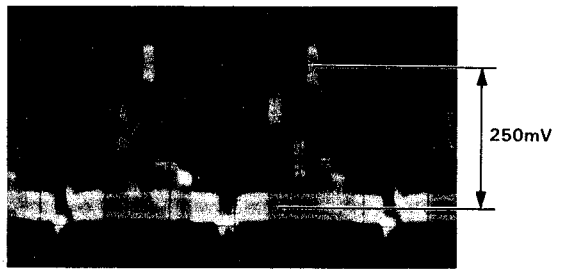
3-7-8. Chroma Gamma Adjustment

Object : Color-bar pattern chart

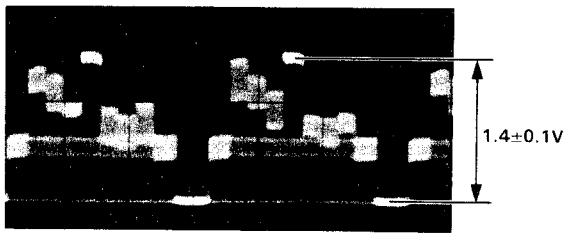


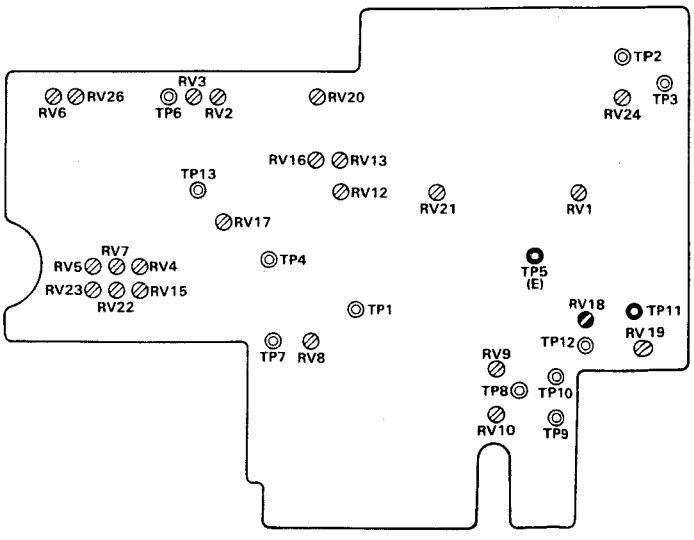
Measuring equipment : Oscilloscope
To be measured : TP11 (GND: TP5)/PR-46 board
To be adjusted : ◐RV18/PR-46 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



2. Adjust the ◐RV18/PR-46 board so that the white peak level at TP11/PR-46 board is 1.4±0.1 V.

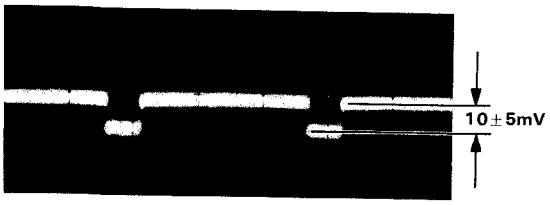


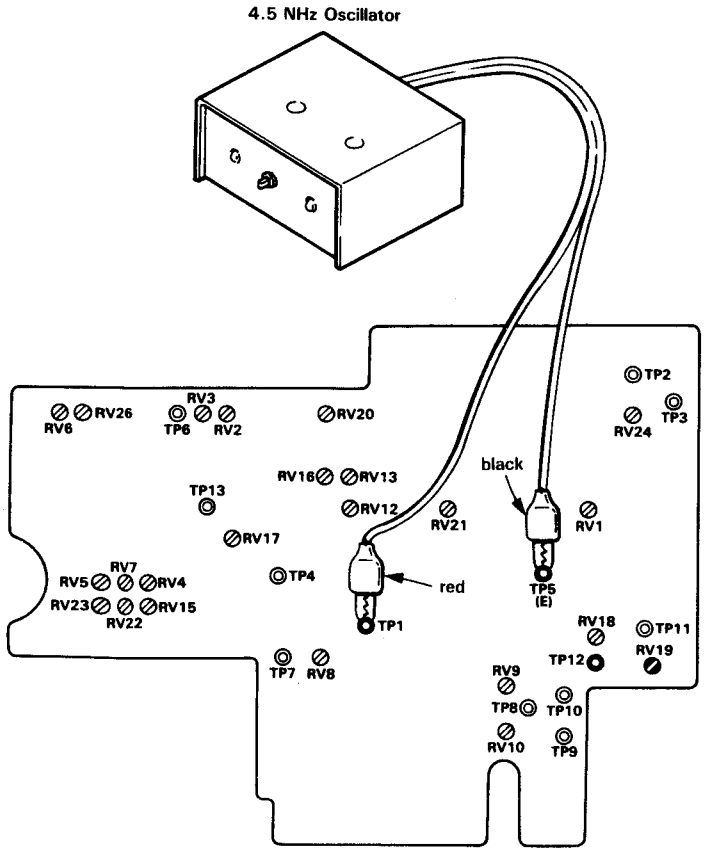


PR-46 board (component side)

3-7-9. Yw Black Clip Adjustment

Lens	:	Close
Measuring equipment	:	Oscilloscope
To be measured	:	TP12 (GND: TP5)/PR-46 board
To be adjusted	:	◐RV19/PR-46 board
Trigger	:	TP2 (HD)/DF-21 board
Specification	:	10±5 mV





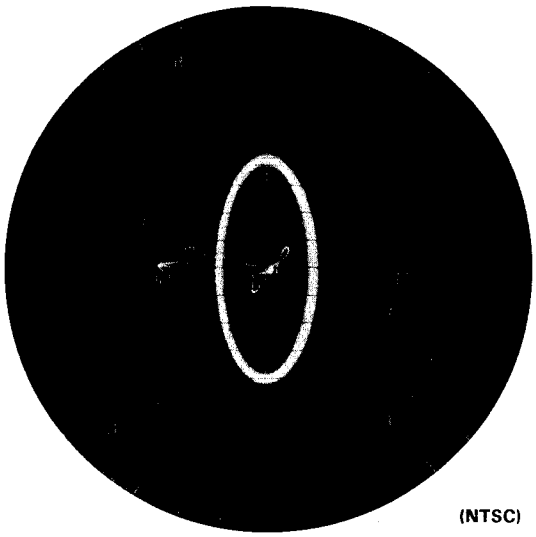
PR-46 board (component side)

3-7-10. R-Y Axis Adjustment

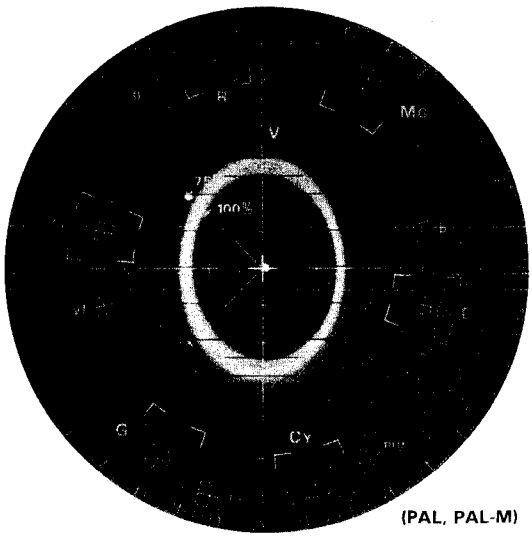
Lens	:	Close
Measuring equipment	:	Vectorscope
To be adjusted	:	◐LV3, ◐LV4 } /CR-21 board

1. Attach the 4.5 MHz oscillation jig to TP1/PR-46 board.
2. Set the major axis of an ellipse to the R-Y axis on the vectorscope by using both ◐LV3 and ◐LV4/CR-21 board.

Note: Be sure to make an ellipse by turning ◐RV5/CR-21 board a little if the waveform constitutes a circle, and then to perform adjustment.
In this case, be sure to carry out 3-7-14. Color Adjustment after this adjustment is completed.



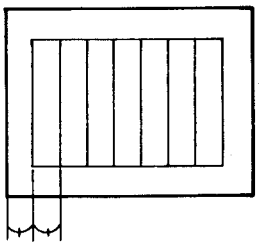
(NTSC)



(PAL, PAL-M)

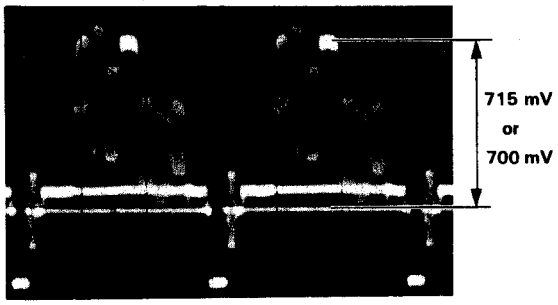
3-7-11. PRESET White Balance Adjustment

Object : Color-bar pattern chart

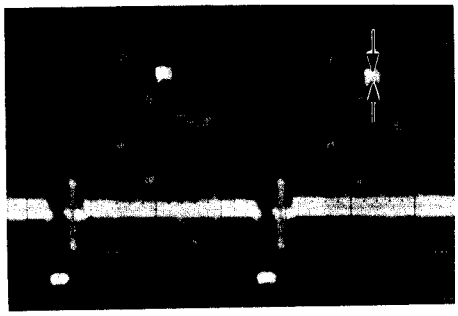


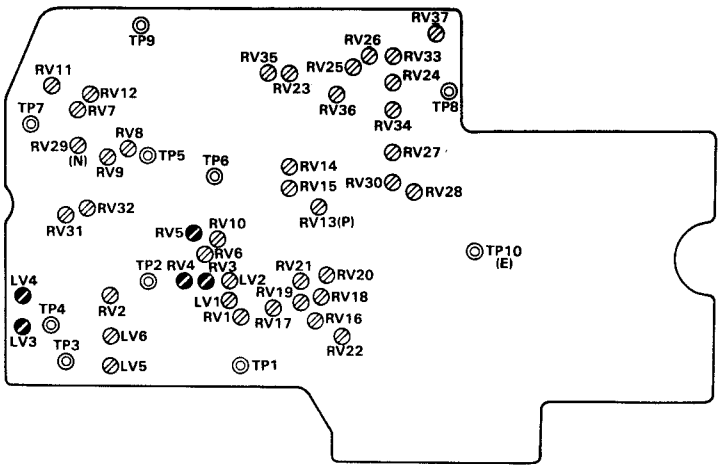
Measuring equipment : Oscilloscope
To be measured : TP7 (GND: TP10)/CR-21 board
Preparation : WHITE BAL switch→"PRESET"
To be adjusted : ◐RV3, ◐RV4 } /CR-21 board
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP7/CR-21 board is 715 mV for NTSC or 700 mV for PAL and PAL-M.

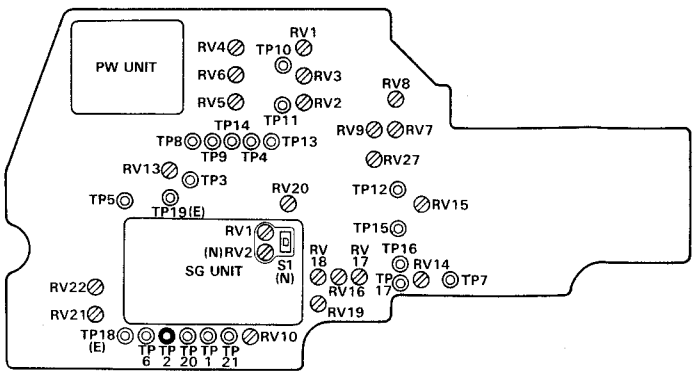


2. Adjust the ◐RV3 and ◐RV4/CR-21 board so that the carrier leakage at white peak becomes minimum.





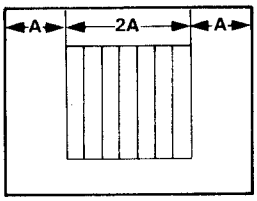
CR-21 board (component side)



DF-21 board (component side)

3-7-12. Chroma Cancel Adjustment

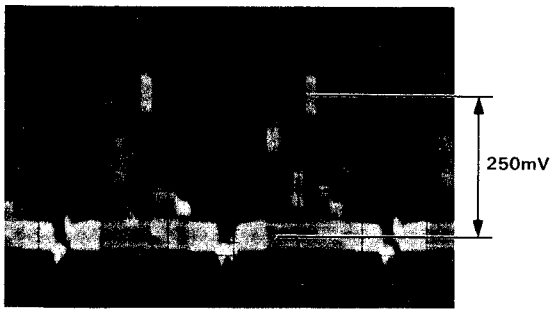
Object : Color-bar pattern chart



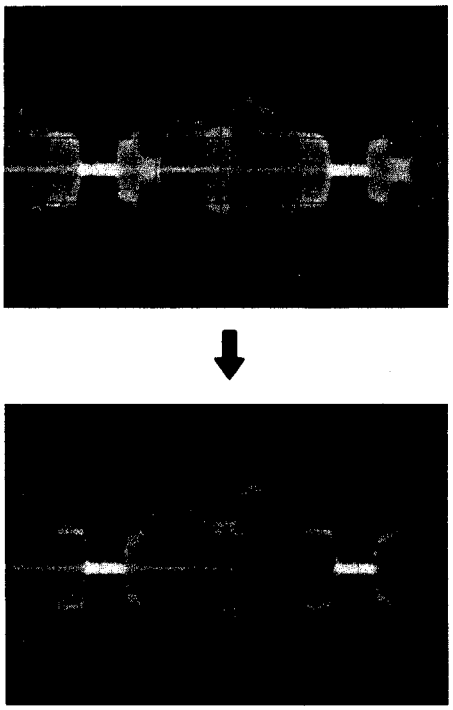
monitor
(reduced scan)

Measuring equipment : Oscilloscope
To be measured : TP4 (GND: TP10)/CR-21 board
Preparation : ◐RV1/CR-21 board→Fully clockwise ↻
To be adjusted : ◐RV2/CR-21 board
Trigger : TP20/DF-21 board

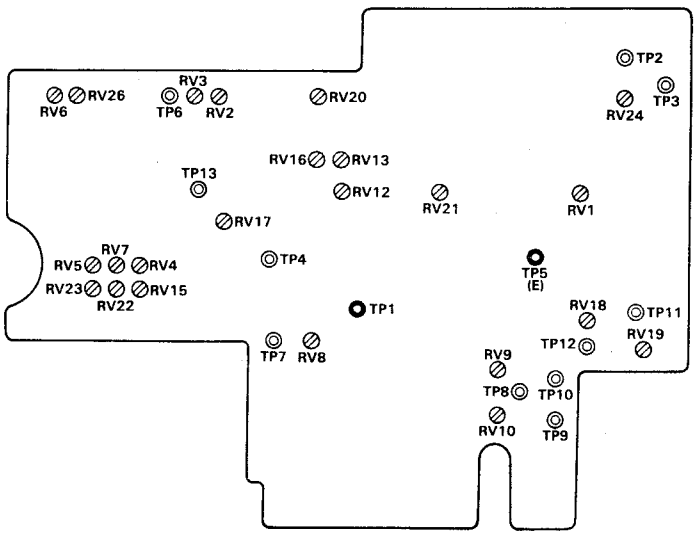
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



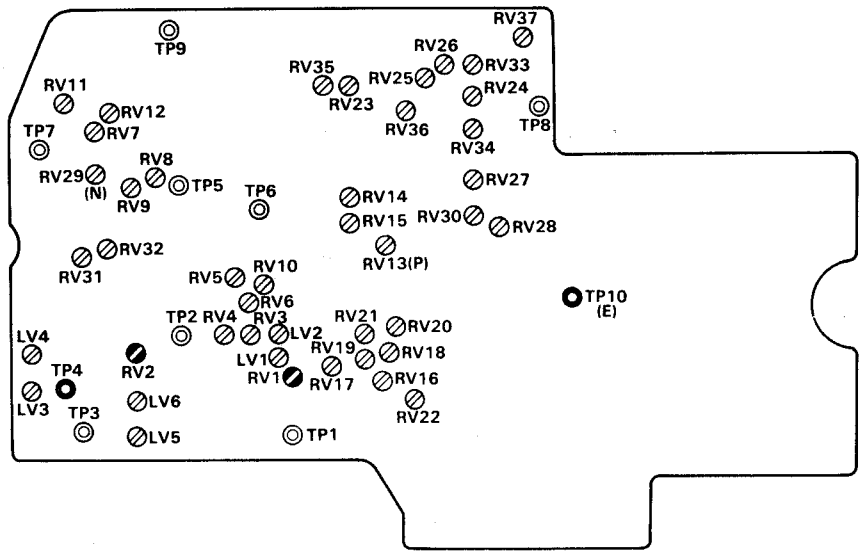
2. Adjust the ◐RV2/CR-21 board so that the part where the waveform appears to be double at TP4/CR-21 board becomes minimum.



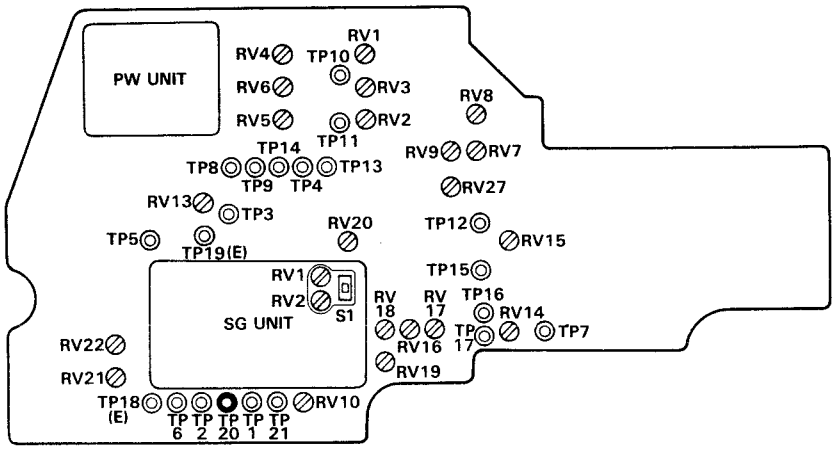
Note: After this adjustment is completed, be sure to carry out 3-7-13. Chroma Linecrawl Adjustment.



PR-46 board (component side)



CR-21 board (component side)

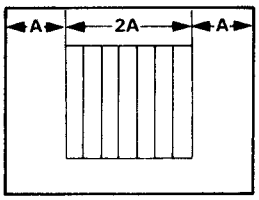


DF-21 board (component side)

3-7-13. Chroma Linecrawl Adjustment (For NTSC)

Note: Be sure to carry out 3-7-12. Chroma Cancel Adjustment before this adjustment.

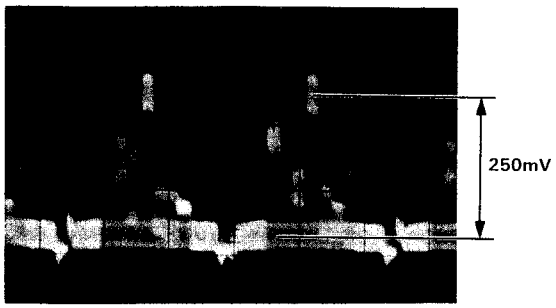
Object : Color-bar pattern chart



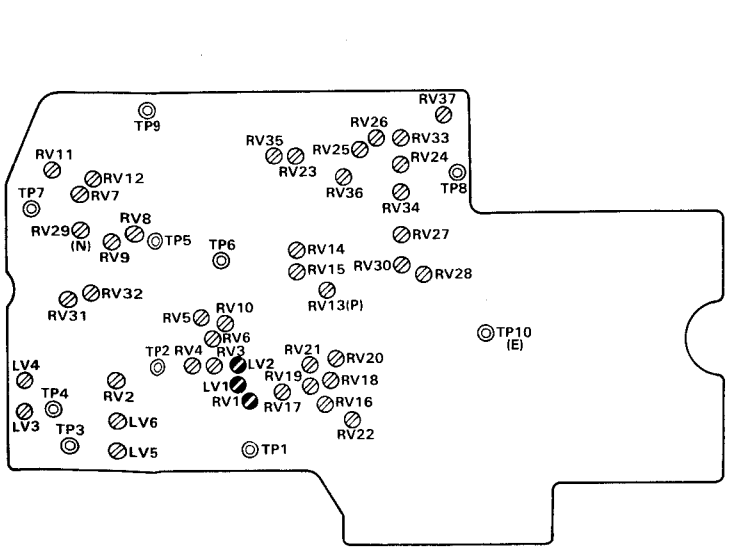
monitor
(reduced scan)

Measuring equipment : Oscilloscope, vectorscope
To be adjusted : ◐RV1, ◐LV1, ◐LV2 } /CR-21 board
Trigger : TP2 (HD)/DF-21 board

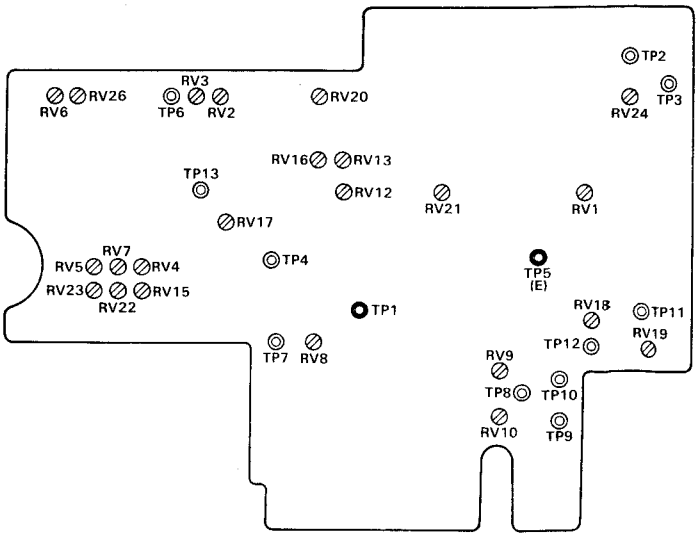
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



2. Adjust the ◐RV1, ◐LV1 and ◐LV2/CR-21 board so that the beam spots on the vectorscope become minimum.



CR-21 board (component side)

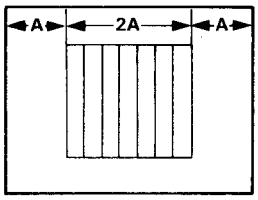


PR-46 board (component side)

3-7-13. Chroma Linecrawl Adjustment (For PAL and PAL-M)

Note: Be sure to carry out 3-7-12. Chroma Cancel Adjustment before this adjustment.

Object : Color-bar pattern chart



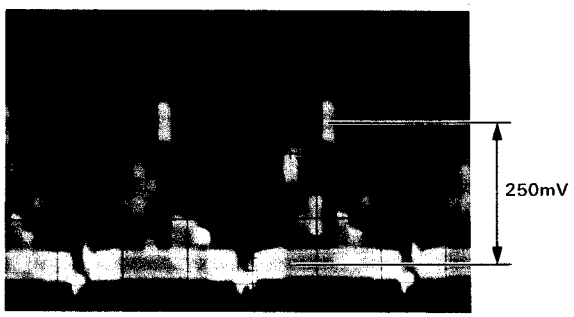
monitor
(reduced scan)

Measuring equipment : Oscilloscope, vectorscope (NTSC mode)

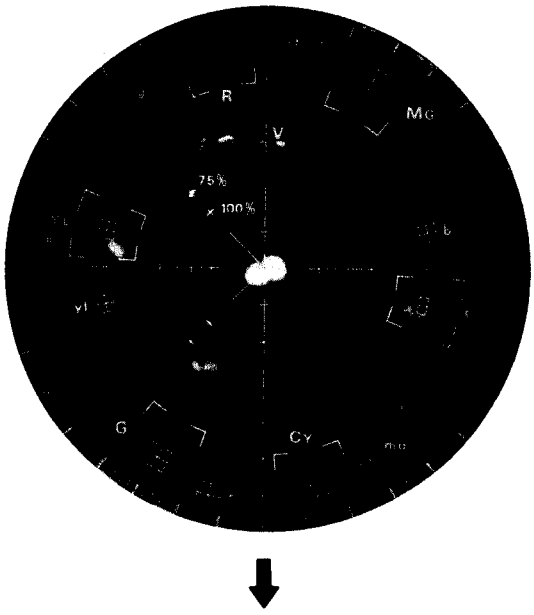
To be adjusted : ◐RV1, ◐LV1, ◐LV2 /CR-21 board

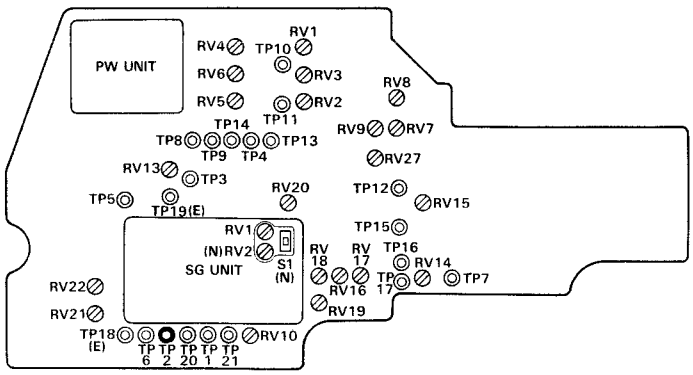
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



2. Adjust the ◐RV1, ◐LV1 and ◐LV2/CR-21 board so that the beam spots on the vectorscope become minimum.

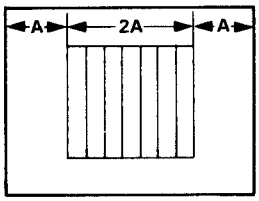




DF-21 board (component side)

3-7-14. Color Adjustment

Object : Color-bar pattern chart



monitor
(reduced scan)

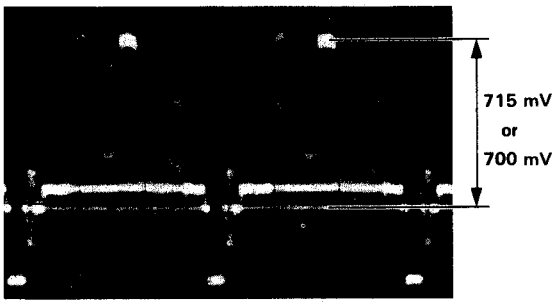
Measuring equipment : Vectorscope

Preparation : Attach the color vector scale (J-6025-690-A) to the screen faceplate of the vectorscope.

To be measuring : ●RV5, ●RV6, ●LV3, ●LV4, ●LV5, ●LV6 /CR-21 board

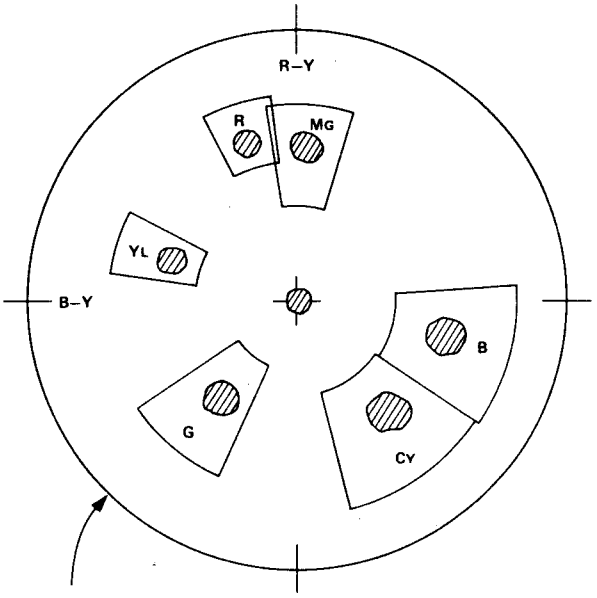
Trigger : TP2 (HD)/DF-21 board

1. Adjust the lens iris so that the white peak level at TP7/CR-21 board is 715 mV for NTSC or 700 mV for PAL and PAL-M.

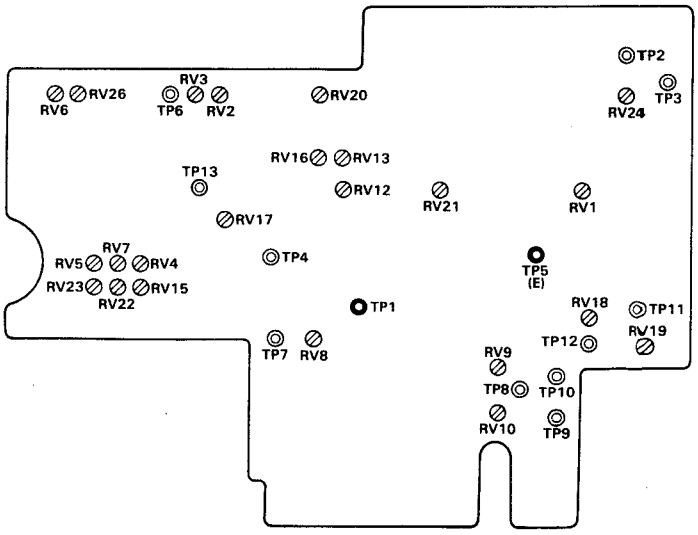


2. Adjust the PHASE control of the vectorscope so that the beam spot of burst signal is overlapped with the scale of the vectorscope.

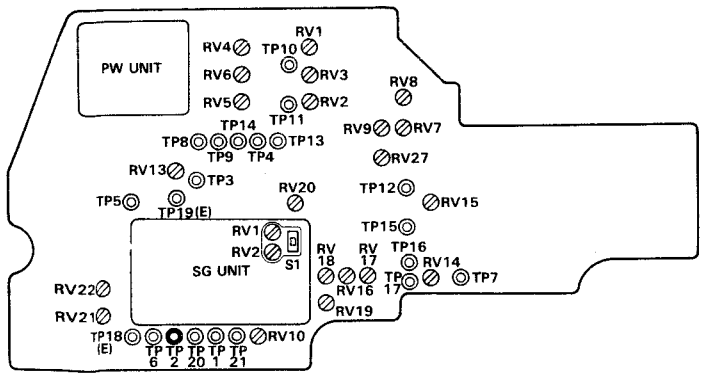
3. Place the bright spots representing the respective colors in a color-bar pattern within the respective scale using the ●RV5, ●RV6, ●LV3, ●LV4, ●LV5 and ●LV6/CR-21 board.



Attach the color vector scale to the screen faceplate of the vectorscope.



PR-46 board (component side)

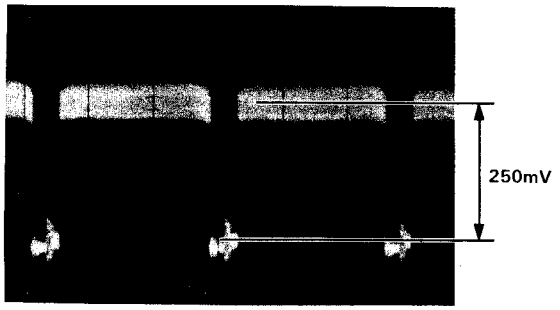


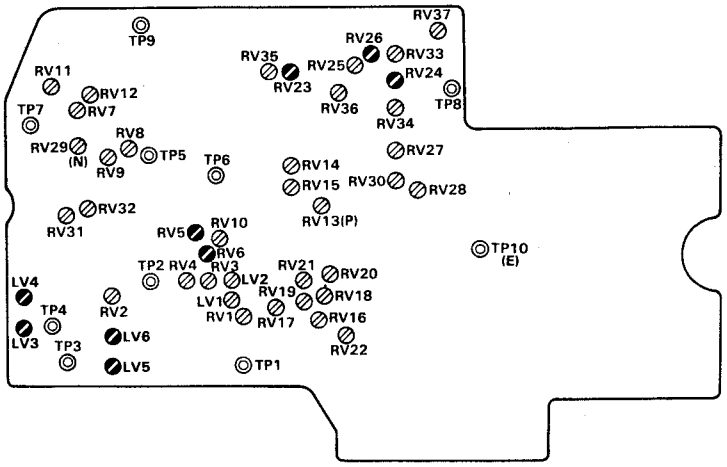
DF-21 board (component side)

3-7-15. Color Shading Adjustment

Object : Overall white
Measuring equipment : Vectorscope, oscilloscope
To be adjusted : ◐RV23, ◐RV24, ◐RV26 } /CR-21 board
Trigger : TP2 (HD)/DF-21 board

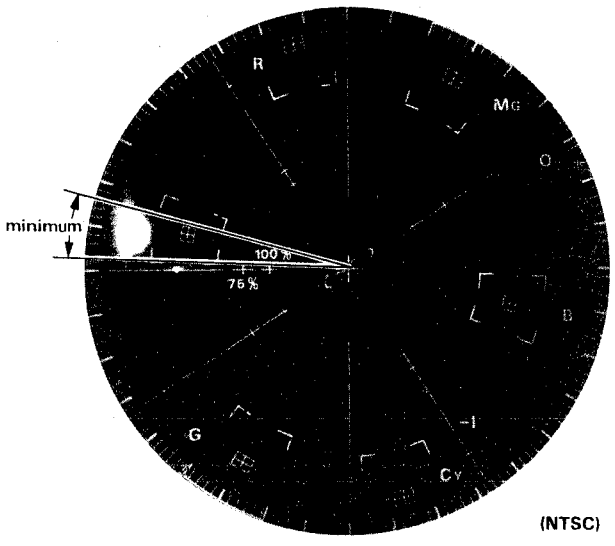
1. Adjust the lens iris so that the white peak level at TP1/PR-46 board is 250 mV.



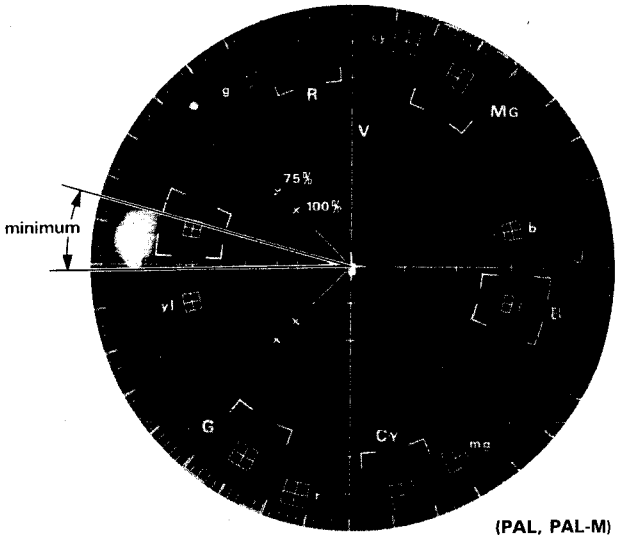


CR-21 board (component side)

2. After accomplishing automatic white balancing, cover the lens with the yellow filter.
3. Move the beam spot on the screen of the vectorscope at fullscale position by adjusting the gain control knob of the vectorscope.
4. Adjust the ◐RV23, ◐RV24 and ◐RV26/CR-21 board so that the beam spot becomes minimum.



(NTSC)



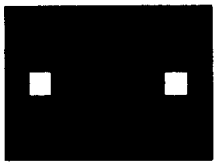
(PAL, PAL-M)

Note: After this adjustment is completed, confirm that the specification of 3-7-14. Color Adjustment is satisfied. If it is not satisfied, be sure to carry out 3-7-14. Color Adjustment.

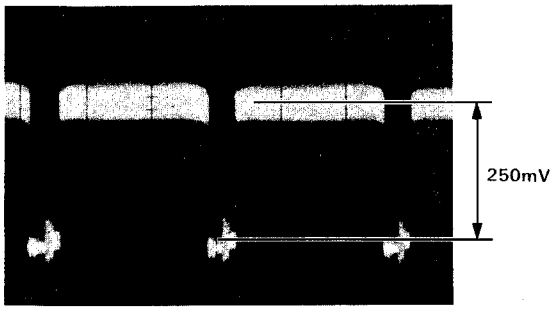
3-7-16. Lens Color Shading Adjustment (For DXC-1820)

Note: Be sure to carry out 3-7-15. Color Shading Adjustment before this adjustment.

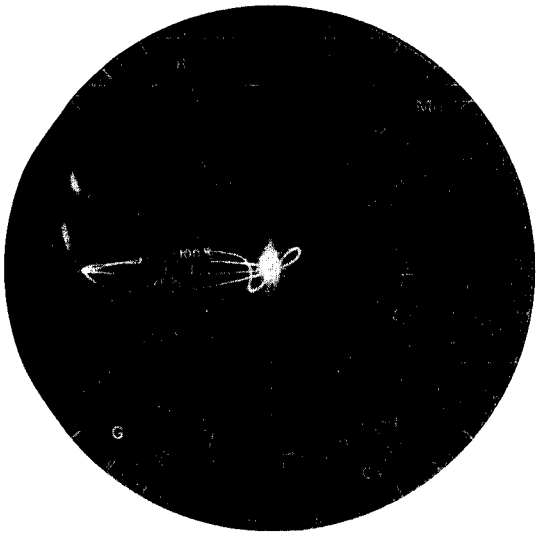
Object	:	Overall white (pattern box "AUTO")
Measuring equipment	:	Oscilloscope, vectorscope
Preparation	:	Cut a piece of black paper into the size of test chart, then make two windows as shown below. Set the distance between the camera and pattern box at 1.2m.



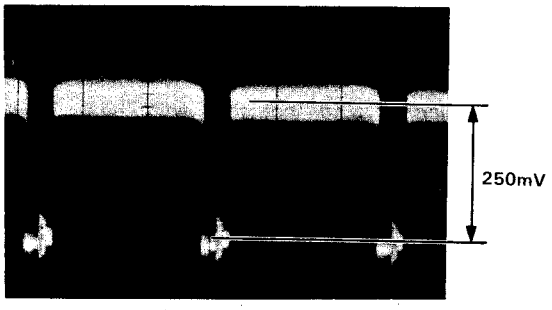
1. Adjust the lens iris so that the video level at TP1/PR-46 board is 250 mV.



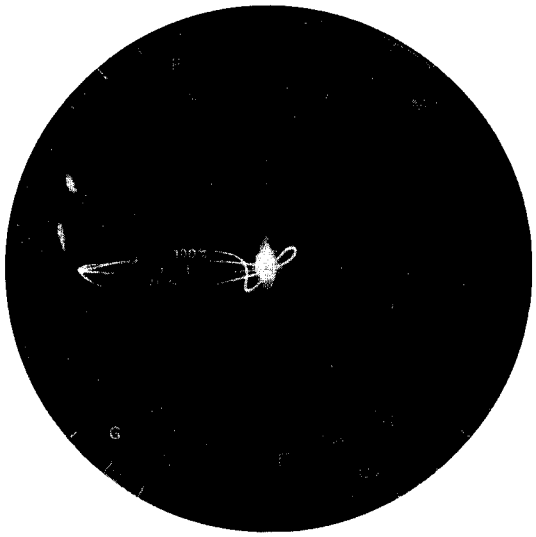
2. After accomplishing automatic white balancing, cover the lens with the yellow filter.
3. Attach the chart (shown above) to the pattern box.
4. Mark the phases of two beam spots on the vectorscope. (To avoide miss adjustment, please distinguish which beam spot on the vectorscope represents which window's output.)



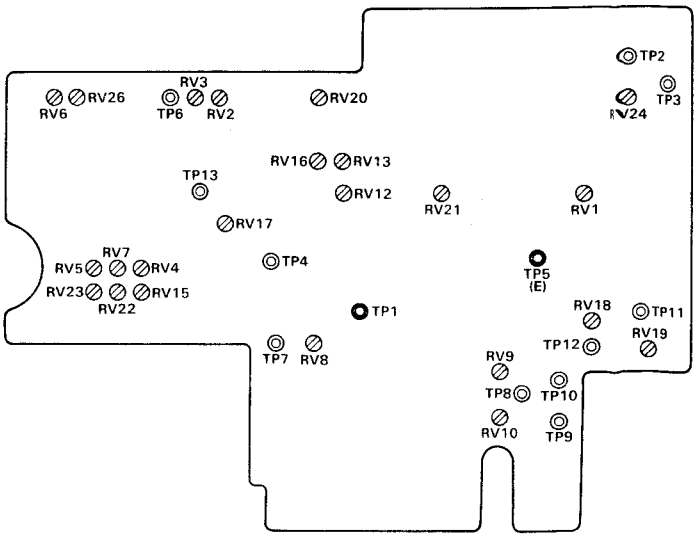
5. Remove the yellow filter and chart.
6. Attach the ND filter (J-6025-820-A) to the pattern box and set the video level at TP1/PR-46 board to be 250 mV by fine adjusting brightness on the pattern box surface when the lens iris control is set at F1.6.



7. After accomplishing automatic white balancing, cover the lens with the yellow filter and attach the chart to the pattern box with ND filter.
8. Adjust the ◐RV25/CR-21 board so that the two beam spots on the vectorscope are the same as Step 4.



Note: After this adjustment is completed, reset the pattern box to "AUTO".

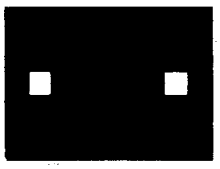


PR-46 board (component side)

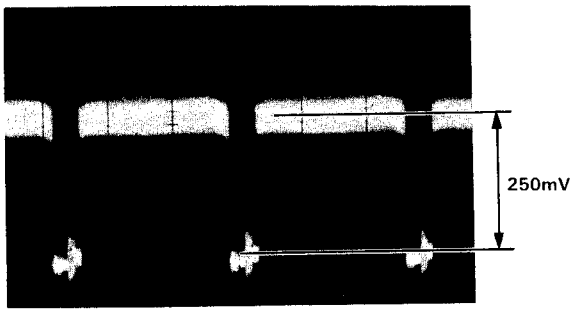
3-7-16. Lens Color Shading Adjustment (For DXC-1820P/1820PM)

Note: Be sure to carry out 3-7-15. Color Shading Adjustment before this adjustment.

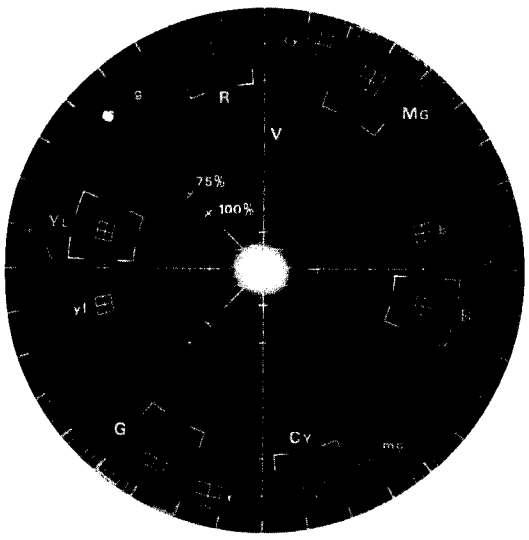
Object : Overall white (pattern box "AUTO")
Measuring equipment : Oscilloscope, vectorscope (NTSC mode)
Preparation : Cut a piece of black paper into the size of test chart, then make two windows as shown below. Set the distance between the camera and pattern box at 1.2m.



1. Adjust the lens iris so that the video level at TP1/PR-46 board is 250 mV.



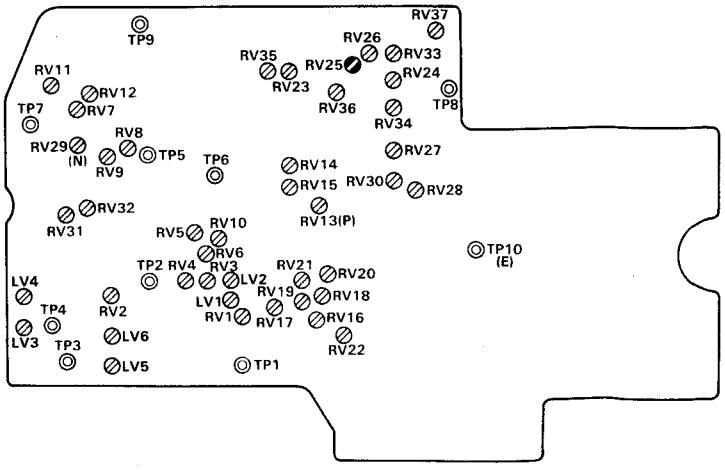
2. After accomplishing automatic white balancing, cover the lens with the yellow filter.
3. Attach the chart (shown above) to the pattern box.
4. Mark the phases of two beam spots on the vectorscope. (To avoide miss adjustment, please distinguish which beam spot on the vectorscope represents which window's output.)



5. Remove the yellow filter and chart.
6. Attach the ND filter (J-6025-820-A) to the pattern box and set the video level at TP1/PR-46 board at 250 mV by fine adjusting brightness on the pattern box surface when the lens iris control is set at F 1.6.

7. After accomplishing automatic white balancing, cover the lens with the yellow filter and attach the chart to the pattern box with ND filter.
8. Adjust the ◐RV25/CR-21 board so that the two beam spots on the vectorscope are the same as Step 4.

Note: After this adjustment is completed, reset the pattern box to "AUTO".



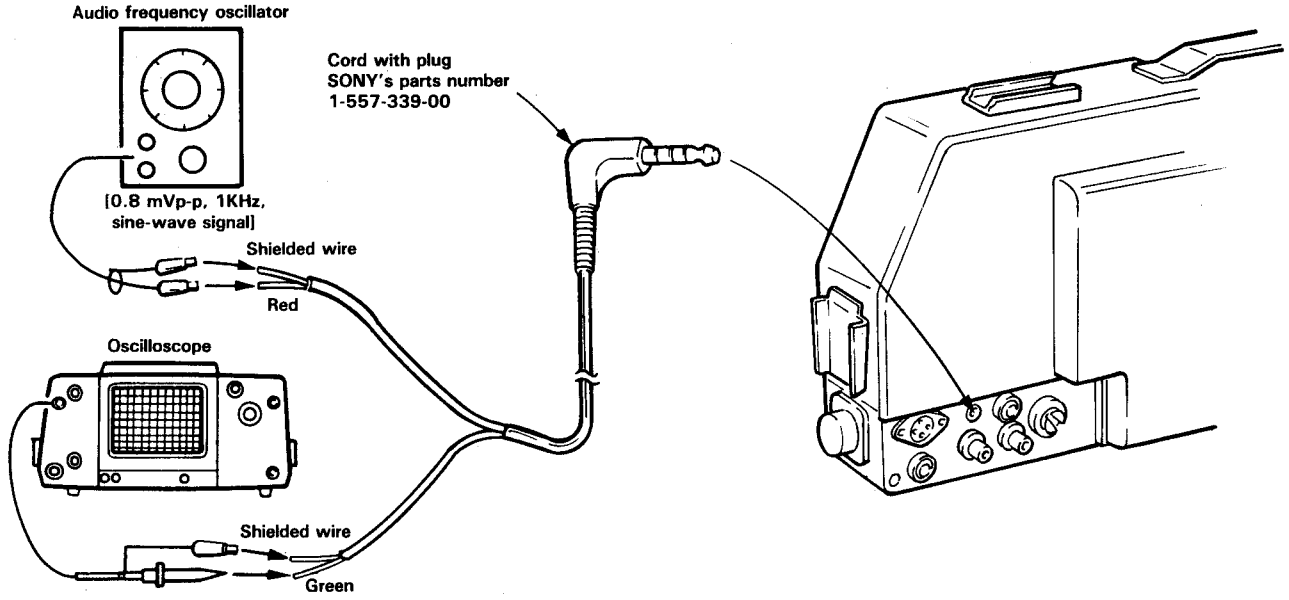
CR-21 board (component side)

3-8. OTHERS

3-8-1. INTERCOM Adjustment

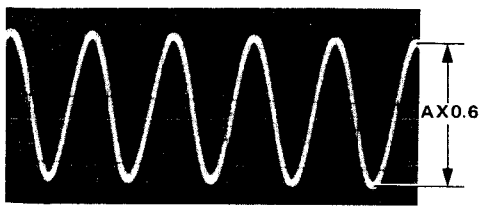
Measuring equipment : Oscilloscope and audio frequency oscillator

Connection :

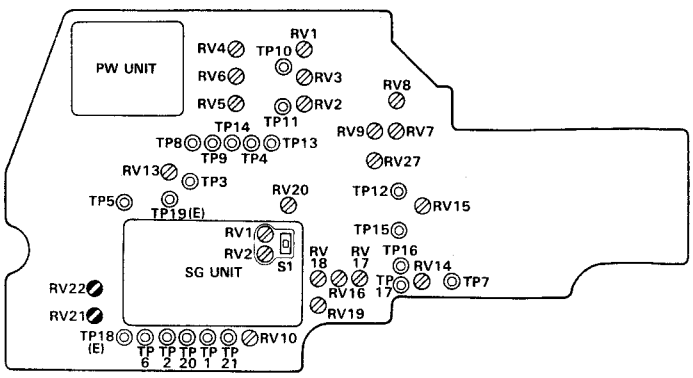


To be measured : INTERCOM jack
Preparation : ◐RV22/DF-21 board→Fully clockwise ↻
To be adjusted : ◐RV21, ◐RV22 } /DF-21 board

1. Measure the output voltage level A when ◐RV21/DF-21 board is fully turned counterclockwise ↺.
2. Adjust the ◐RV21/DF-21 board so that the output level is 60% of the value A measured in Step 1.

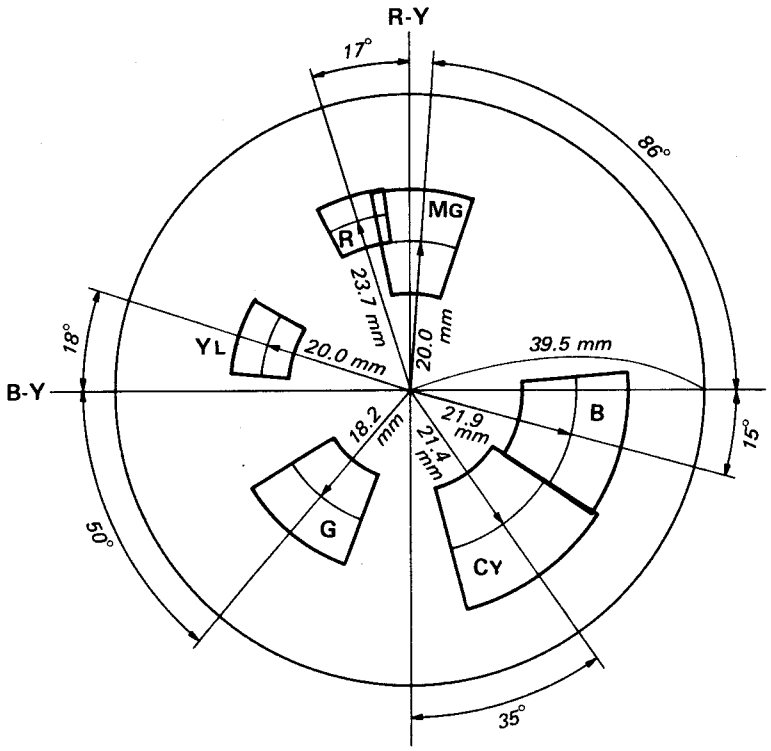


3. Adjust the ◐RV22/DF-21 board so that the output voltage level is 300±30 mV.

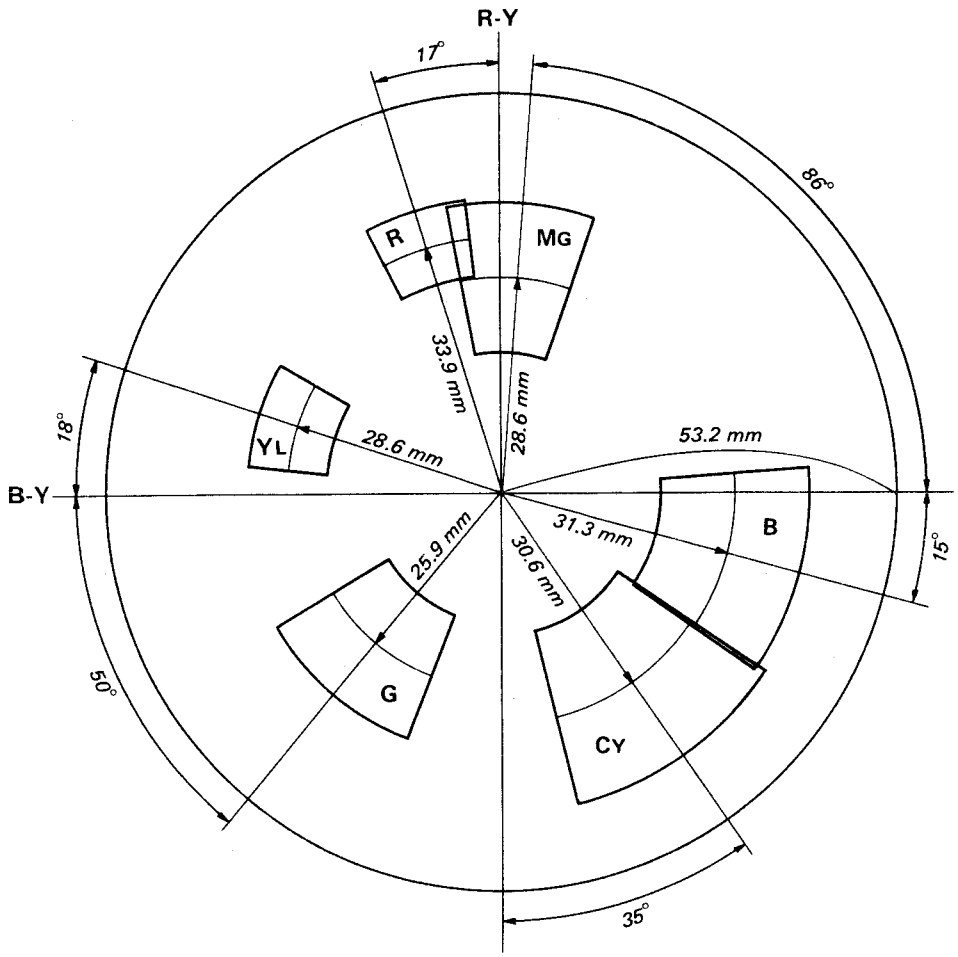


DF-21 board (component side)

3-9. SONY SPECIFIED VECTORSCOPE SCALE



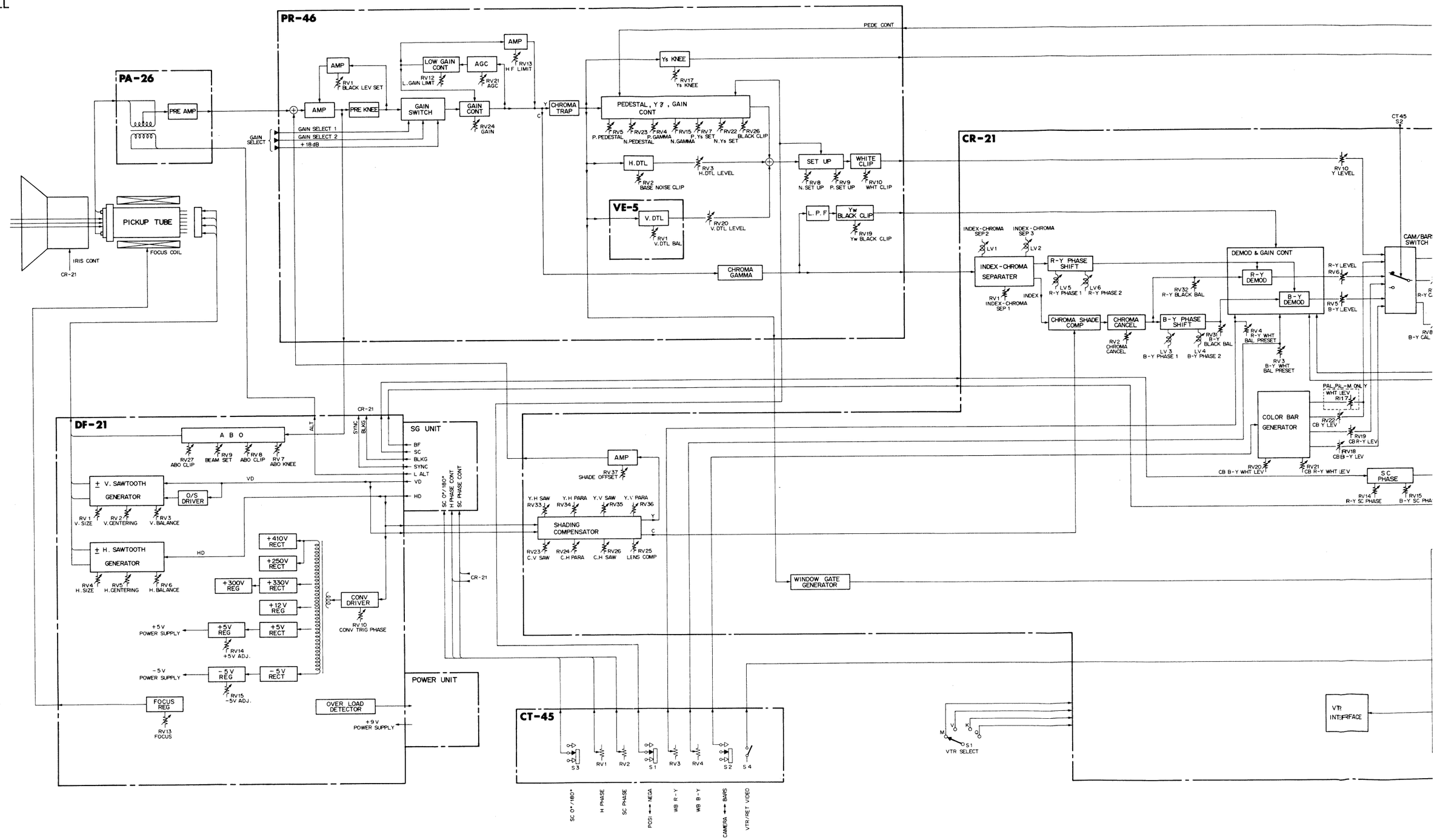
	SPEC	
	PHASE	LEVEL
M_G	±15°	±35%
R	±10°	±15%
Y_L	±12°	±19%
G	±19°	±35%
C_Y	±21°	±39%
B	±19.5°	±32%



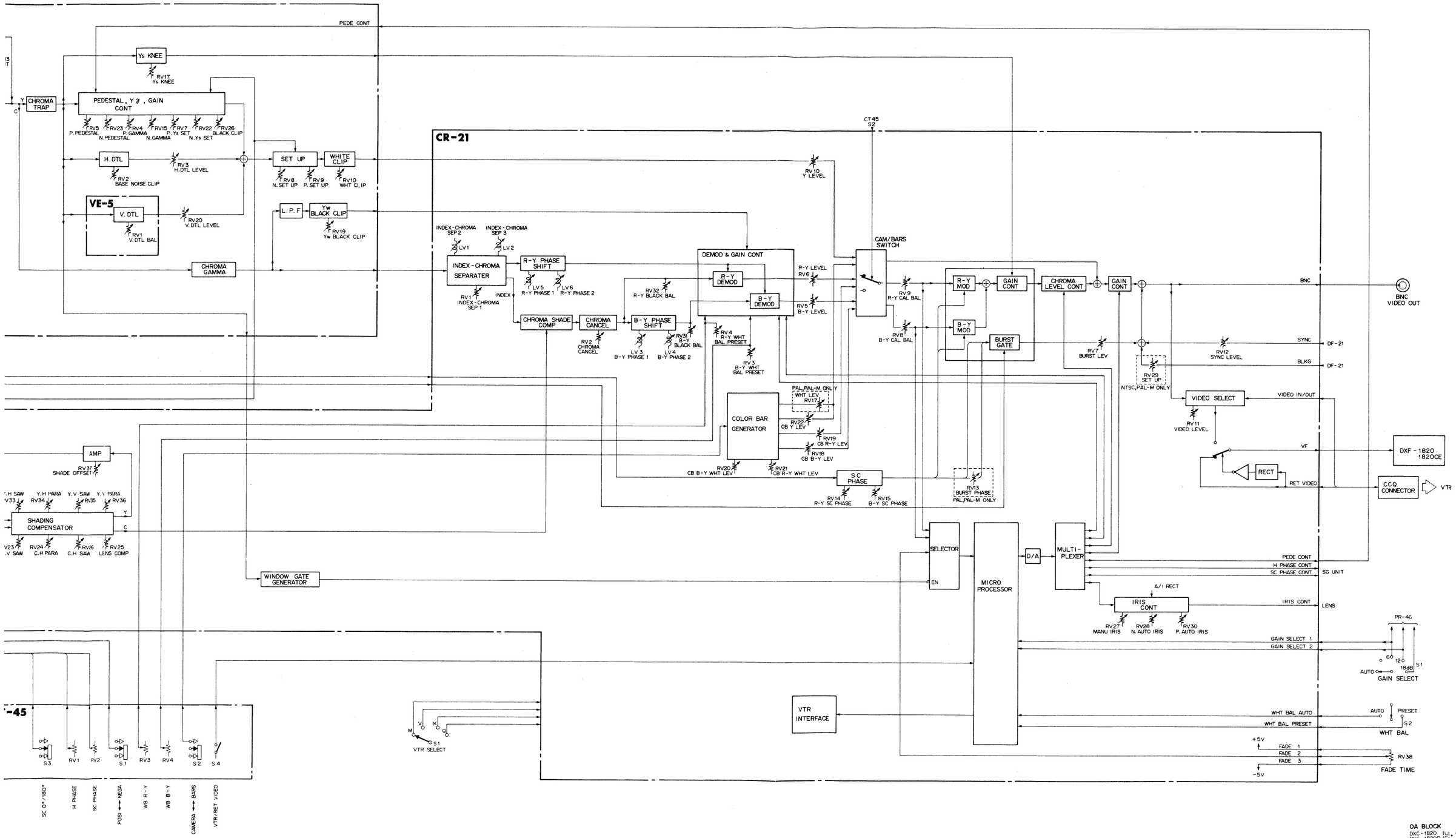
SECTION 4 DIAGRAM

第4章 ブロック図、回路図、マウント図

4-1 BLOCK DIAGRAM
OVERALL



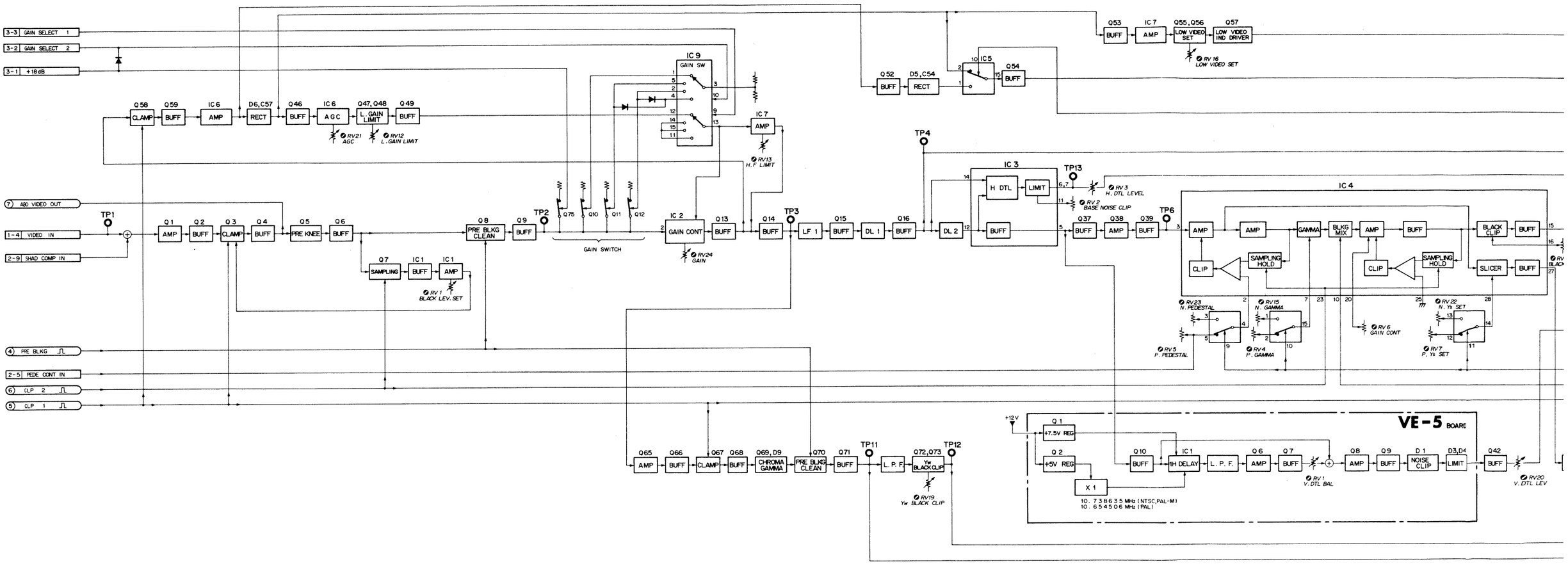
OA B,D

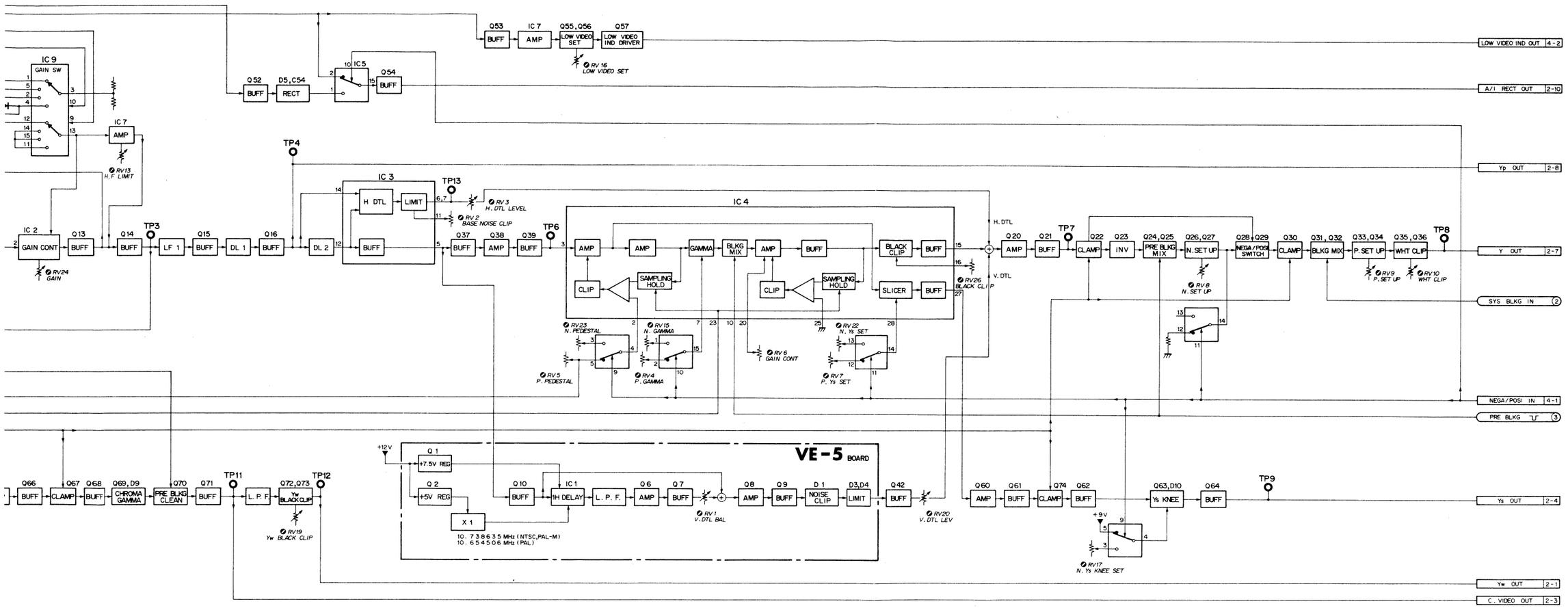


OA BLOCK
DXC-1820 (J, ◀J)
DXC-1820P (E)
DXC-1821 (J, ◀J)
DXC-1821P (E)
DXC-1820PM(R)

PR-46 B,D PR-46 B

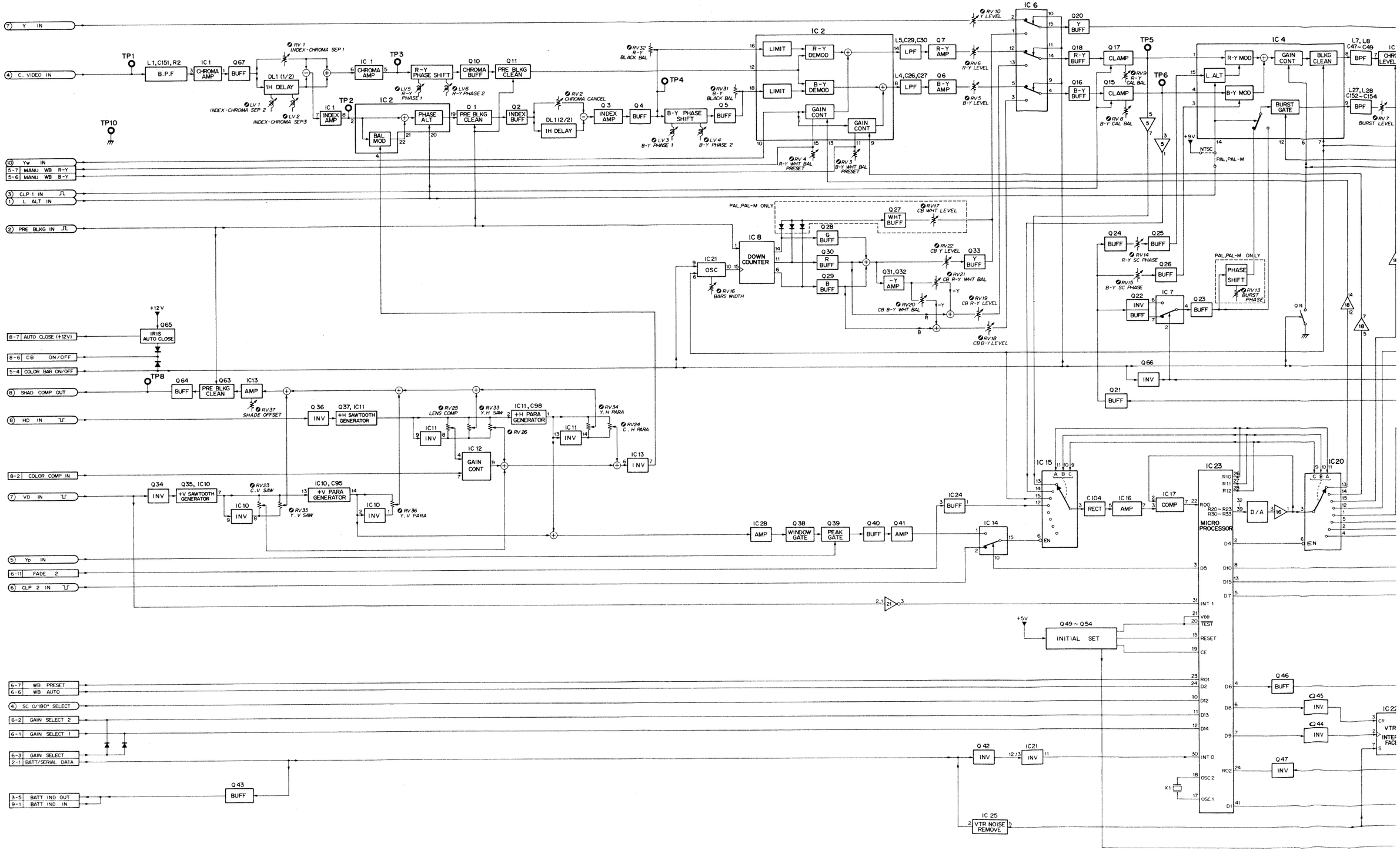
PR-46



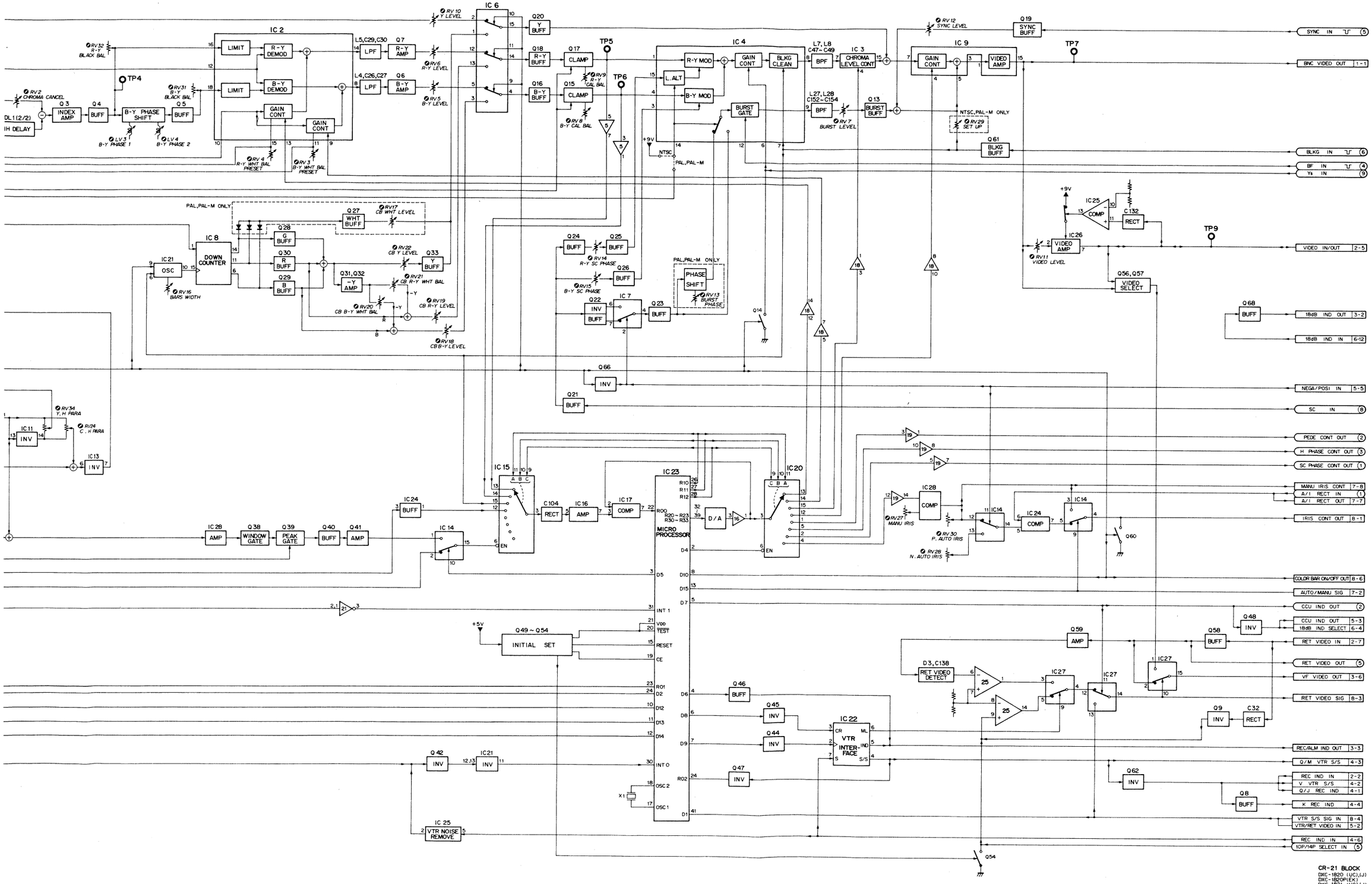


PR-46 BLOCK
DXC-1820 (UC),(J)
DXC-1820P (EK)
DXC-1821 (UC),(J)
DXC-1821P (EK)
DXC-1820PM (BR)

CR-21


7 Y IN
4 C. VIDEO IN
TP1
L1,C151,R2
B.P.F
IC1
CHROMA AMP
Q67
BUFF
DL1 (1/2)
1H DELAY
RV1 INDEX-CHROMA SEP1
LV1 INDEX-CHROMA SEP2
LV2 INDEX-CHROMA SEP3
IC1
CHROMA AMP
TP3
R-Y PHASE SHIFT
LV5 R-Y PHASE1
LV6 R-Y PHASE2
Q10 CHROMA BUFF
Q11 PRE BLKG CLEAN
TP2
IC1 INDEX AMP
IC2
PHASE ALT
BAL MOD
Q1 PRE BLKG CLEAN
Q2 INDEX BUFF
RV2 CHROMA CANCEL
DL1 (2/2)
1H DELAY
Q3 INDEX AMP
Q4 BUFF
TP4
B-Y PHASE SHIFT
LV3 B-Y PHASE1
LV4 B-Y PHASE2
Q5 BUFF
RV31 B-Y BLACK BAL
RV32 R-Y BLACK BAL
TP10
10 Yw IN
5-7 MANU WB R-Y
5-6 MANU WB B-Y
3 CLP 1 IN
1 L ALT IN
2 PRE BLKG IN
IC2
LIMIT
R-Y DEMOD
B-Y DEMOD
GAIN CONT
LIMIT
GAIN CONT
RV4 R-Y WHT BAL PRESET
RV3 B-Y WHT BAL PRESET
L5,C29,C30
LPF
Q7 R-Y AMP
L4,C26,C27
LPF
Q6 B-Y AMP
RV10 Y LEVEL
RV6 R-Y LEVEL
RV5 B-Y LEVEL
IC6
Q20 Y BUFF
Q18 R-Y BUFF
Q16 B-Y BUFF
Q17 CLAMP
Q15 CLAMP
RV9 R-Y CAL BAL
RV8 B-Y CAL BAL
TP5
TP6
+9V
NTSC
PAL,PAL-M
IC4
L. ALT
R-Y MOD
B-Y MOD
GAIN CONT
BLKG CLEAN
BURST GATE
L7, L8 C47~C49
BPF
L27, L28 C152~C154
BPF
RV7 BURST LEVEL
PAL,PAL-M ONLY
Q27 WHT BUFF
RV17 CB WHT LEVEL
IC8
DOWN COUNTER
IC21
OSC
RV16 BARS WIDTH
Q28 G BUFF
Q30 R BUFF
Q29 B BUFF
Q31,Q32 -Y AMP
RV22 CB Y LEVEL
Q33 Y BUFF
RV21 CB R-Y WHT BAL
RV20 CB B-Y WHT BAL
RV19 CB R-Y LEVEL
RV18 CB B-Y LEVEL
Q24 BUFF
Q25 BUFF
RV14 R-Y SC PHASE
Q26 BUFF
RV15 B-Y SC PHASE
PAL,PAL-M ONLY
PHASE SHIFT
RV13 BURST PHASE
IC7
Q22 INV BUFF
Q23 BUFF
Q14
Q66 INV
Q21 BUFF
+12V
Q65 IRIS AUTO CLOSE
8-7 AUTO CLOSE (+12V)
8-6 CB ON/OFF
5-4 COLOR BAR ON/OFF
TP8
8 SHAD COMP OUT
8 HD IN
Q64 BUFF
Q63 PRE BLKG CLEAN
IC13 AMP
RV37 SHADE OFFSET
Q36 INV
Q37, IC11 +H SAWTOOTH GENERATOR
RV25 LENS COMP
RV33 Y.H SAW
IC11, C98 +H PARA GENERATOR
RV26
RV34 Y.H PARA
RV24 C.H PARA
IC11 INV
IC11 INV
IC12 GAIN CONT
IC13 INV
8-2 COLOR COMP IN
7 VD IN
Q34 INV
Q35, IC10 +V SAWTOOTH GENERATOR
RV23 C.V SAW
IC10 INV
RV35 Y.V SAW
IC10, C95 +V PARA GENERATOR
IC10 INV
RV36 Y.V PARA
5 Yp IN
6-11 FADE 2
6 CLP 2 IN
IC15
A B C
C104 RECT
IC16 AMP
IC17 COMP
IC23
MICRO PROCESSOR
D/A
IC20
C B A
IC24 BUFF
IC14
EN
IC28 AMP
Q38 WINDOW GATE
Q39 PEAK GATE
Q40 BUFF
Q41 AMP
Q49 ~ Q54 INITIAL SET
6-7 WB PRESET
6-6 WB AUTO
4 SC 0/180° SELECT
6-2 GAIN SELECT 2
6-1 GAIN SELECT 1
6-3 GAIN SELECT
2-1 BATT/SERIAL DATA
3-5 BATT IND OUT
9-1 BATT IND IN
Q43 BUFF
Q42 INV
IC21 INV
IC25 VTR NOISE REMOVE
Q46 BUFF
Q45 INV
Q44 INV
Q47 INV

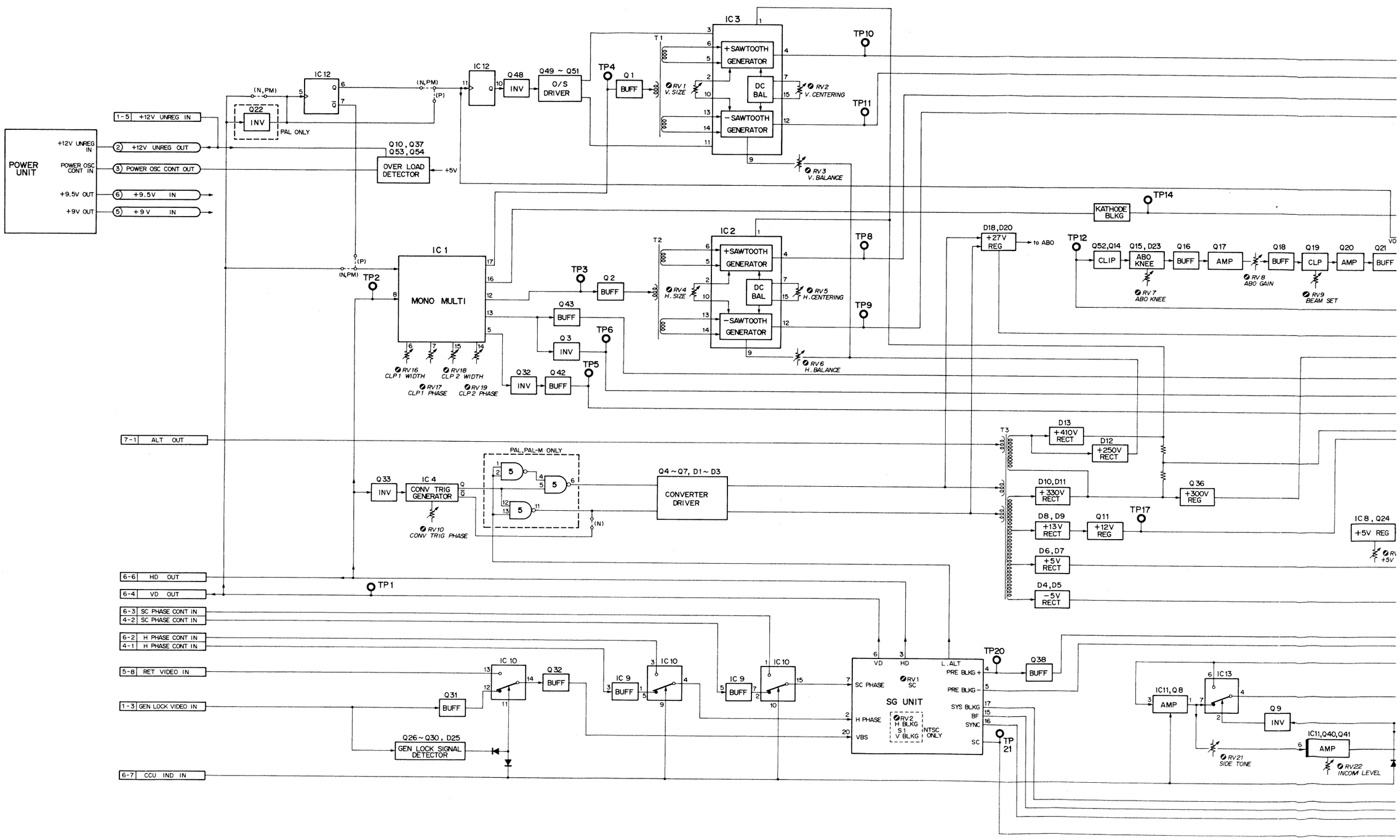
CR-21 B,D

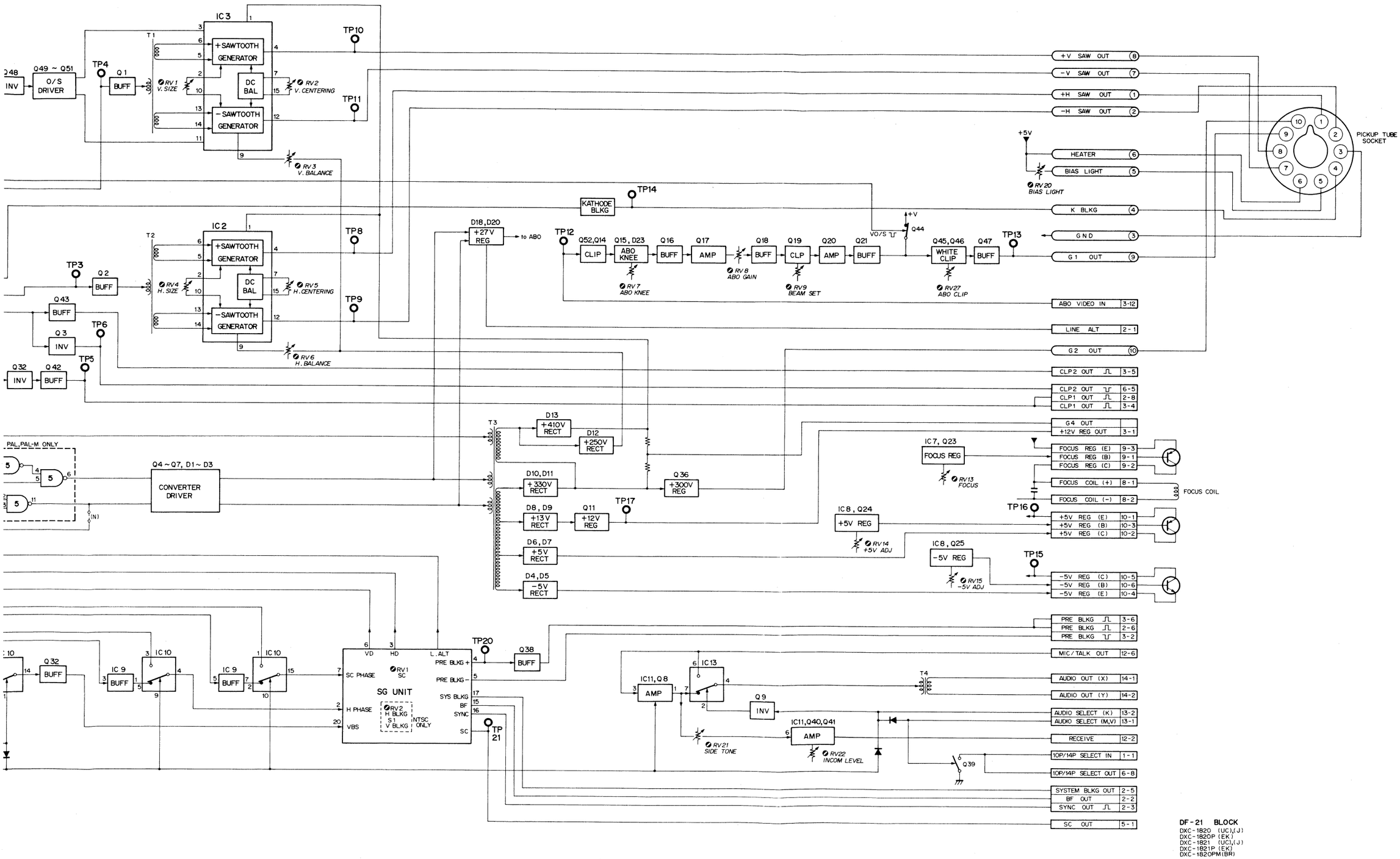


CR-21 BLOCK
DXC-1820 (UC),(J)
DXC-1820P(EK)
DXC-1821 (UC),(J)
DXC-1821P(EK)
DXC-1820PM(BR)

DF-21 B,D DF-21 B,

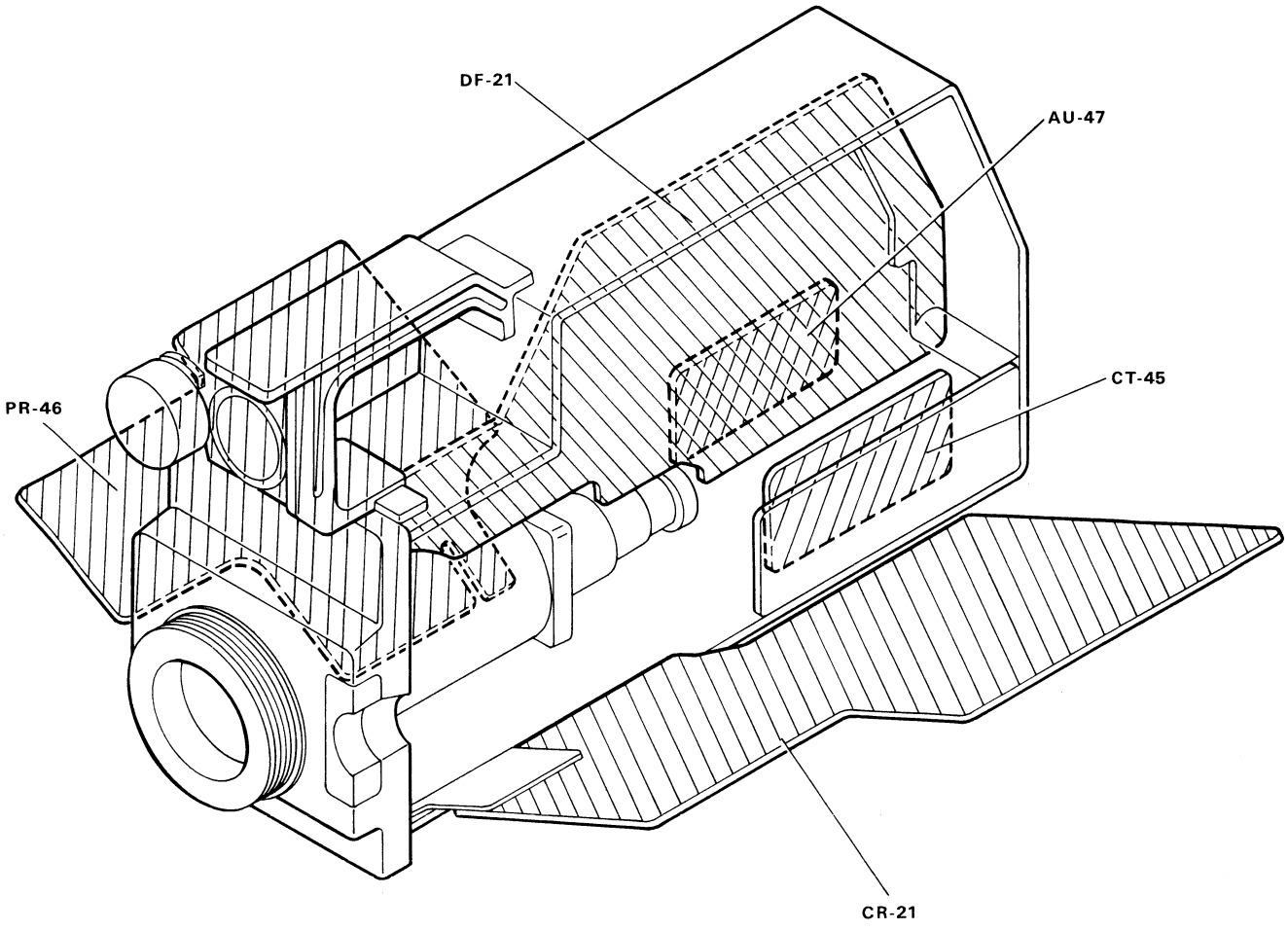
DF-21



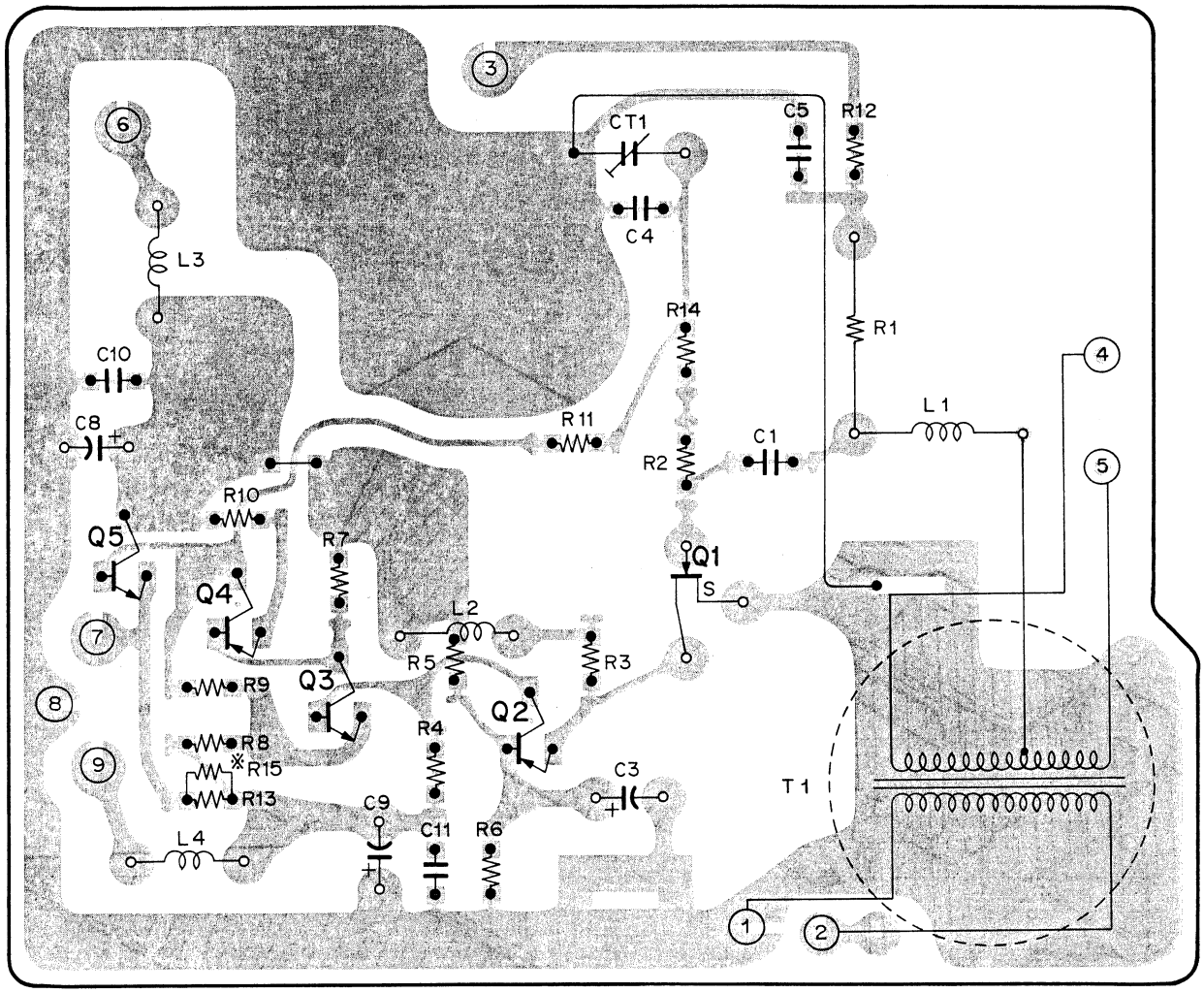


DF-21 BLOCK
DXC-1820 (UC),(J)
DXC-1820P (EK)
DXC-1821 (UC),(J)
DXC-1821P (EK)
DXC-1820PM(BR)

4-2 MOUNTING DIAGRAM AND SCHEMATIC DIAGRAM LOCATION OF MOUNTED CIRCUIT BOARD



PA-29 BOARD
PRE AMP



※ CHANGE INFORMATION

REF. NO.	DESCRIPTION	EFFECTIVE SER. NO.
R15	ADD or OPEN	DXC-1820(UC) 10001 ~ 10180 DXC-1820(J) 10001 ~ 10120 DXC-1820P(EK) 10001 ~ 10300
R15	OPEN	DXC-1820(UC) 10181~ DXC-1820(J) 10121~ DXC-1820P(EK) 10301~ DXC-1821(UC),(J) 10001~ DXC-1821P(EK) 10001~

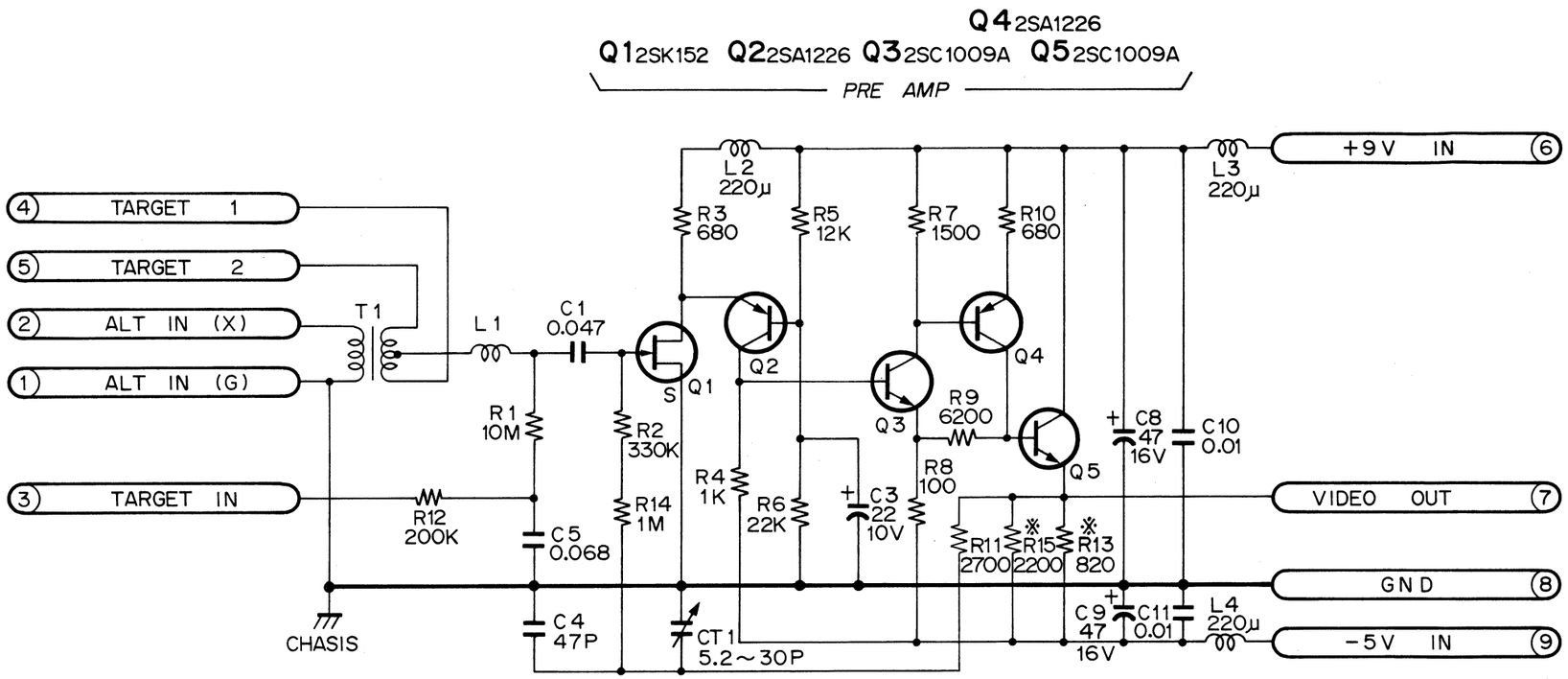
—SOLDERING SIDE—

PA-29 BOARD

1-611-218-11

DXC-1820(UC) 10001 ~
DXC-1820(J) 10001 ~
DXC-1820P(EK) 10001 ~
DXC-1821(UC) 50001 ~
DXC-1821(J) 50001 ~
DXC-1821P(EK) 50001 ~

PA-29 BOARD



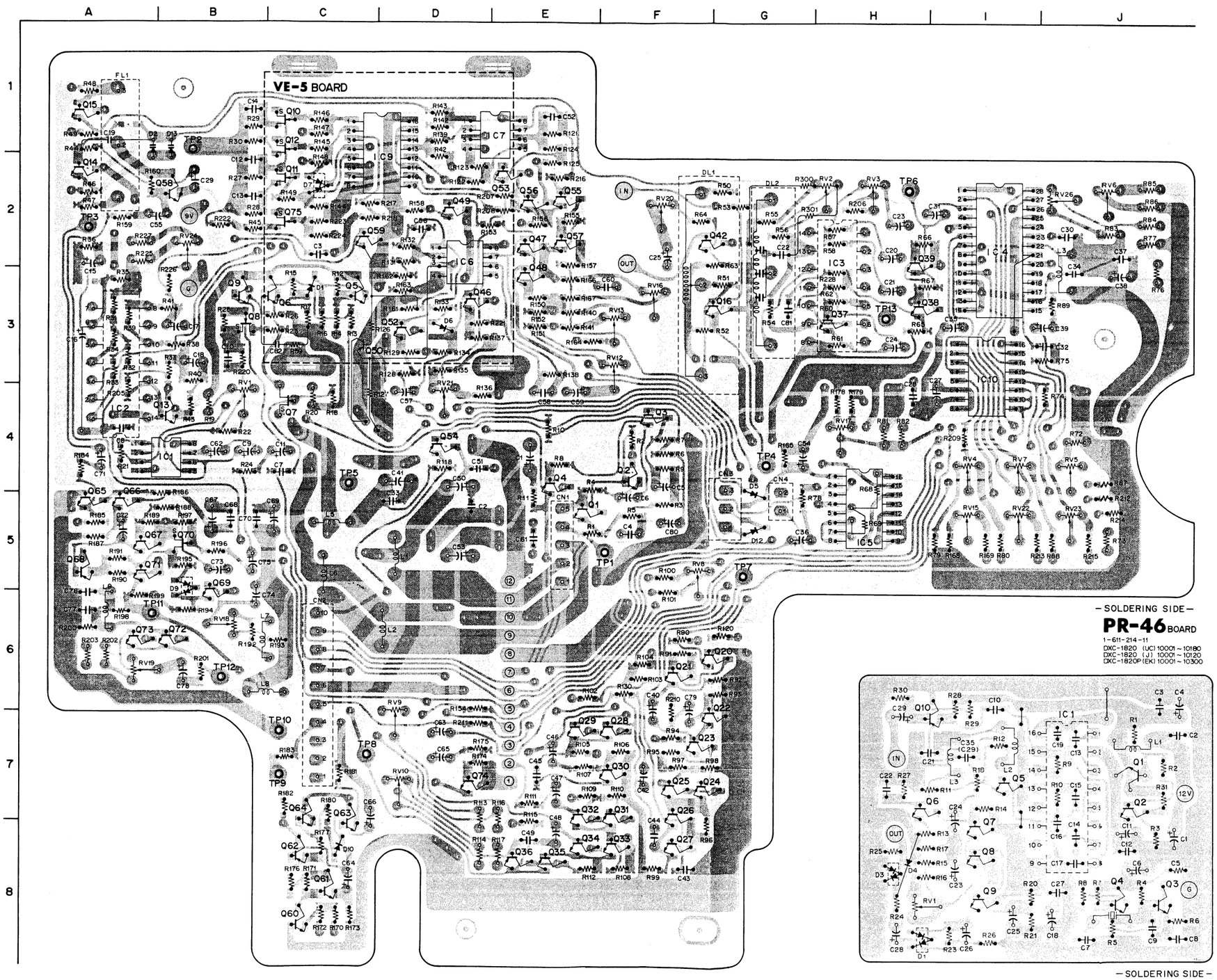
※ CHANGE INFORMATION

REF. NO.	DESCRIPTION	EFFECTIVE SER. NO.
R15	ADD or OPEN → OPEN	DXC-1820 (UC) 10181 ~ DXC-1820 (J) 10121 ~ DXC-1820P (EK) 10301 ~
R13	1500 → 820	DXC-1821 (UC) 50001 ~ DXC-1821 (J) 50001 ~ DXC-1821P (EK) 50001 ~
C4	68P → 47P	DXC-1820 (UC) 10601 ~ DXC-1820 (J) 10321 ~ DXC-1820P (EK) 10651 ~
CT1	6~20P → 5.2~30P	DXC-1821 (UC) 50001 ~ DXC-1821 (J) 50031 ~ DXC-1821P (EK) 50001 ~

PA-29 BOARD

DXC-1820 (UC, J)
DXC-1820P (EK)
DXC-1821 (UC, J)
DXC-1821P (EK)

PR-46 BOARD
VE-5 BOARD
AGC
GAMMA
DTL
PROCESS AMP



— SOLDERING SIDE —

PR-46 BOARD

1-611-214-11
DXC-1820 (UC) 10001 ~ 10180
DXC-1820 (J) 10001 ~ 10120
DXC-1820P (EK) 10001 ~ 10300

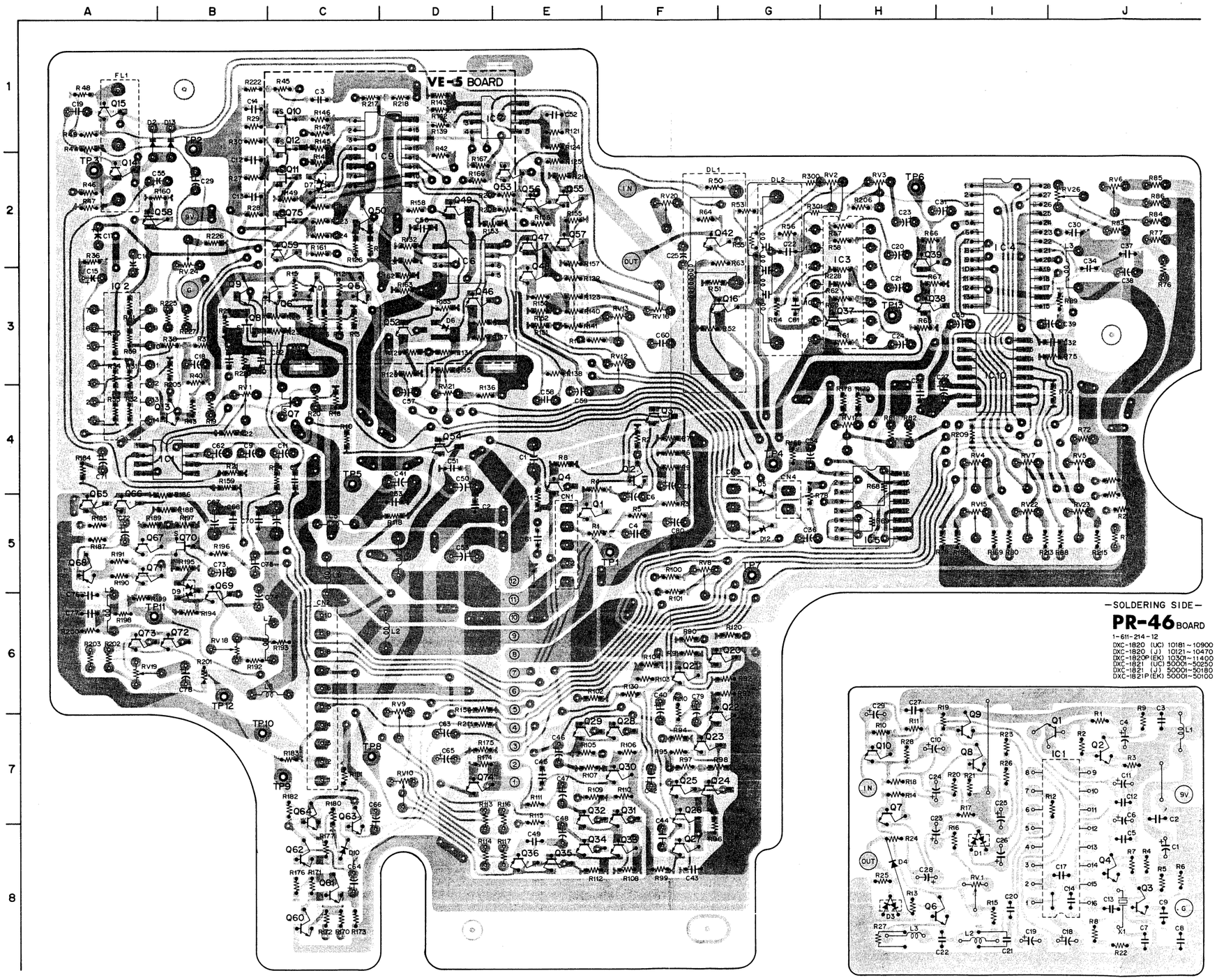
— SOLDERING SIDE —

VE-5 BOARD

CN1	E - 5	RV1	B - 4
CN2	C - 6	RV2	H - 2
CN3	G - 5	RV3	H - 2
CN4	G - 5	RV4	I - 4
		RV5	J - 4
D1	C - 3	RV6	J - 2
D2	A - 1	RV7	I - 4
D5	G - 5	RV8	F - 5
D6	D - 3	RV9	D - 7
D7	C - 2	RV10	D - 7
D9	B - 5	RV12	F - 3
D10	C - 8	RV13	F - 3
D12	G - 5	RV15	I - 5
D13	B - 1	RV16	F - 3
		RV17	H - 4
DL1	F - 3	RV18	B - 6
DL2	G - 3	RV19	A - 6
		RV20	F - 2
FL1	A - 1	RV21	D - 4
		RV22	I - 5
IC1	B - 4	RV23	J - 5
IC2	A - 3	RV24	B - 2
IC3	H - 3	RV26	J - 2
IC4	I - 2		
IC5	H - 5	TP1	F - 5
IC6	D - 2	TP2	B - 1
IC7	E - 1	TP3	A - 2
IC9	C - 1	TP4	G - 4
IC10	I - 3	TP5	C - 4
		TP6	H - 2
Q1	E - 5	TP7	G - 5
Q2	F - 4	TP8	C - 7
Q3	F - 4	TP9	C - 7
Q4	E - 4	TP10	C - 7
Q5	C - 3	TP11	A - 6
Q6	C - 3	TP12	B - 6
Q7	C - 4	TP13	H - 3
Q8	B - 3		
Q9	B - 3		
Q10	C - 1		
Q11	C - 2		
Q12	C - 1		
Q13	B - 4		
Q14	A - 2		
Q15	A - 1		
Q16	G - 3		
Q20	F - 6		
Q21	F - 6		
Q22	F - 7		
Q23	F - 7		
Q24	F - 7		
Q25	F - 7		
Q26	F - 8		
Q27	F - 8		
Q28	F - 7		
Q29	E - 7		
Q30	F - 7		
Q31	F - 8		
Q32	E - 8		
Q33	F - 8		
Q34	E - 8		
Q35	E - 8		
Q36	E - 8		
Q38	H - 3		
Q42	F - 2		
Q46	D - 3		
Q47	E - 2		
Q48	E - 3		
Q49	D - 2		
Q50	C - 3		
Q52	D - 3		
Q53	E - 2		
Q54	D - 4		
Q55	E - 2		
Q56	E - 2		
Q57	E - 2		
Q58	B - 2		
Q59	C - 2		
Q60	C - 8		
Q61	C - 8		
Q62	C - 8		
Q63	C - 8		
Q64	C - 7		
Q65	A - 5		
Q66	A - 5		
Q67	A - 5		
Q68	A - 5		
Q69	B - 6		
Q70	B - 5		
Q71	A - 5		
Q72	B - 6		
Q73	A - 6		
Q74	D - 7		
Q75	C - 2		

DXC-1820(UC) 10001 ~ 10180
DXC-1820(J) 10001 ~ 10120
DXC-1820P(EK) 10001 ~ 10300

PR-46 BOARD
VE-5 BOARD
AGC
GAMMA
DTL
PROCESS AMP



CN1	E · 5	RV1	B · 4
CN2	C · 6	RV2	H · 2
CN3	G · 5	RV3	H · 2
CN4	G · 5	RV4	I · 4
		RV5	J · 4
D1	C · 3	RV6	J · 2
D2	A · 1	RV7	I · 4
D5	G · 5	RV8	F · 5
D6	D · 3	RV9	D · 7
D7	C · 2	RV10	D · 7
D9	B · 5	RV12	F · 3
D10	C · 8	RV13	F · 3
D12	G · 5	RV15	I · 5
D13	B · 1	RV16	F · 3
		RV17	H · 4
DL1	F · 3	RV18	B · 6
DL2	G · 3	RV19	A · 6
		RV20	F · 2
FL1	A · 1	RV21	D · 4
		RV22	I · 5
IC1	B · 4	RV23	J · 5
IC2	A · 3	RV24	B · 2
IC3	H · 3	RV26	J · 2
IC4	I · 2		
IC5	H · 5	TP1	F · 5
IC6	D · 2	TP2	B · 1
IC7	E · 1	TP3	A · 2
IC9	C · 1	TP4	G · 4
IC10	I · 3	TP5	C · 4
		TP6	H · 2
Q1	E · 5	TP7	G · 5
Q2	F · 4	TP8	C · 7
Q3	F · 4	TP9	C · 7
Q4	E · 4	TP10	C · 7
Q5	C · 3	TP11	A · 6
Q6	C · 3	TP12	B · 6
Q7	C · 4	TP13	H · 3
Q8	B · 3		
Q9	B · 3		
Q10	C · 1		
Q11	C · 2		
Q12	C · 1		
Q13	B · 4		
Q14	A · 2		
Q15	A · 1		
Q16	G · 3		
Q20	F · 6		
Q21	F · 6		
Q22	F · 7		
Q23	F · 7		
Q24	F · 7		
Q25	F · 7		
Q26	F · 8		
Q27	F · 8		
Q28	F · 7		
Q29	E · 7		
Q30	F · 7		
Q31	F · 8		
Q32	E · 8		
Q33	F · 8		
Q34	E · 8		
Q35	E · 8		
Q36	E · 8		
Q38	H · 3		
Q42	F · 2		
Q46	D · 3		
Q47	E · 2		
Q48	E · 3		
Q49	D · 2		
Q50	C · 2		
Q52	D · 3		
Q53	E · 2		
Q54	D · 4		
Q55	E · 2		
Q56	E · 2		
Q57	E · 2		
Q58	B · 2		
Q59	C · 2		
Q60	C · 8		
Q61	C · 8		
Q62	C · 8		
Q63	C · 8		
Q64	C · 7		
Q65	A · 5		
Q66	A · 5		
Q67	A · 5		
Q68	A · 5		
Q69	B · 6		
Q70	B · 5		
Q71	A · 5		
Q72	B · 6		
Q73	A · 6		
Q74	D · 7		
Q75	C · 2		

—SOLDERING SIDE—

PR-46 BOARD

1-611-214-12

DXC-1820 (UC) 10181～10900
DXC-1820 (J) 10121～10470
DXC-1820P(EK) 10301～11400
DXC-1821 (UC) 50001～50250
DXC-1821 (J) 50001～50180
DXC-1821P(EK) 50001～50100

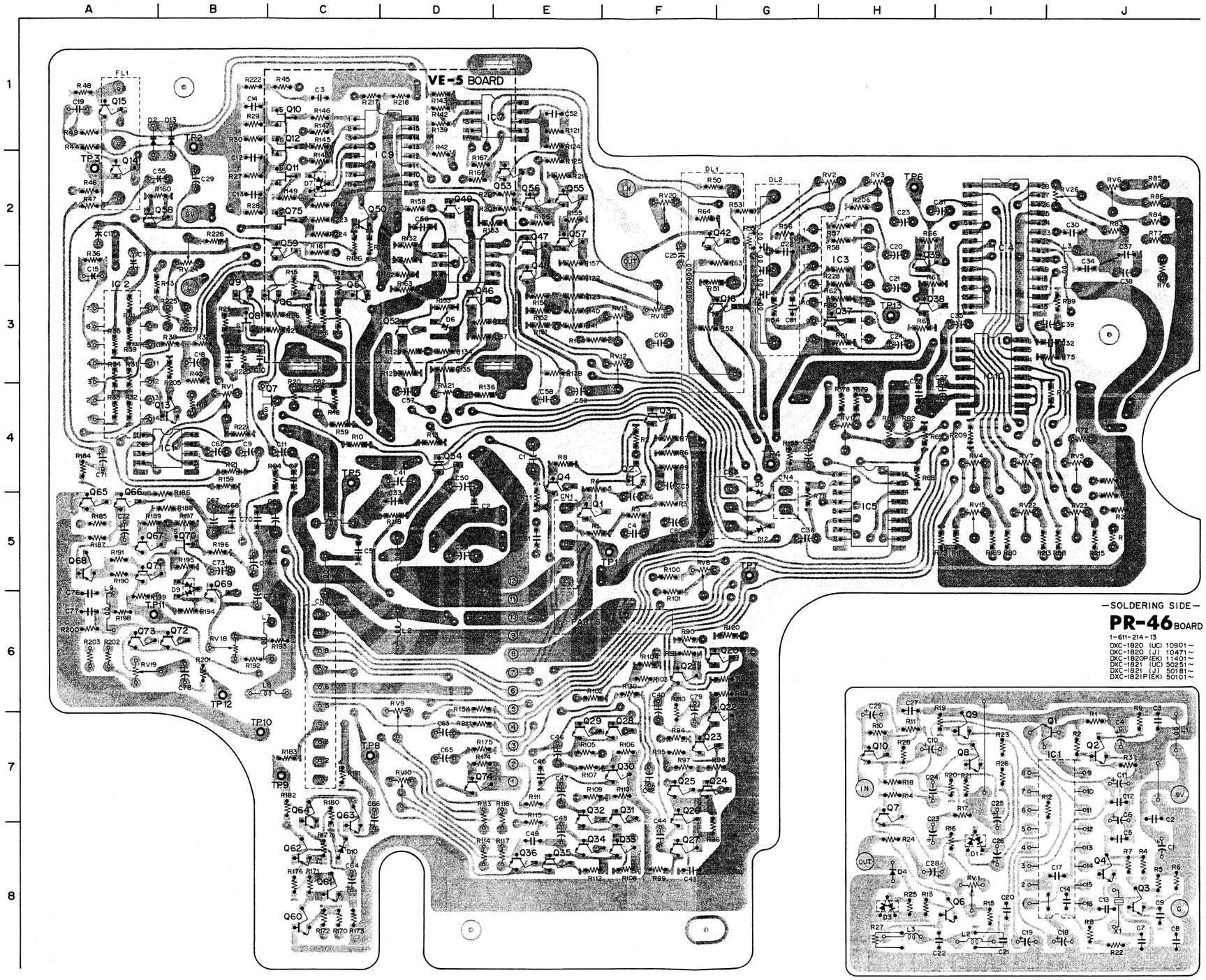
—SOLDERING SIDE—

VE-5 BOARD

1-611-220-11

DXC-1820(UC) 10181～10900
DXC-1820(J) 10121～10470
DXC-1820P(EK) 10301～11400
DXC-1821(UC) 50001～50250
DXC-1821(J) 50001～50180
DXC-1821P(EK) 50001～50100

PR-46 BOARD
VE-5 BOARD
AGC
GAMMA
DTL
PROCESS AMP



—SOLDERING SIDE—

PR-46 BOARD

1-611-214-13

DXC-1820 (UC) 10901～
DXC-1820 (J) 10471～
DXC-1820P(EK) 11401～
DXC-1821 (UC) 50251～
DXC-1821 (J) 50181～
DXC-1821P(EK) 50101～

—SOLDERING SIDE—

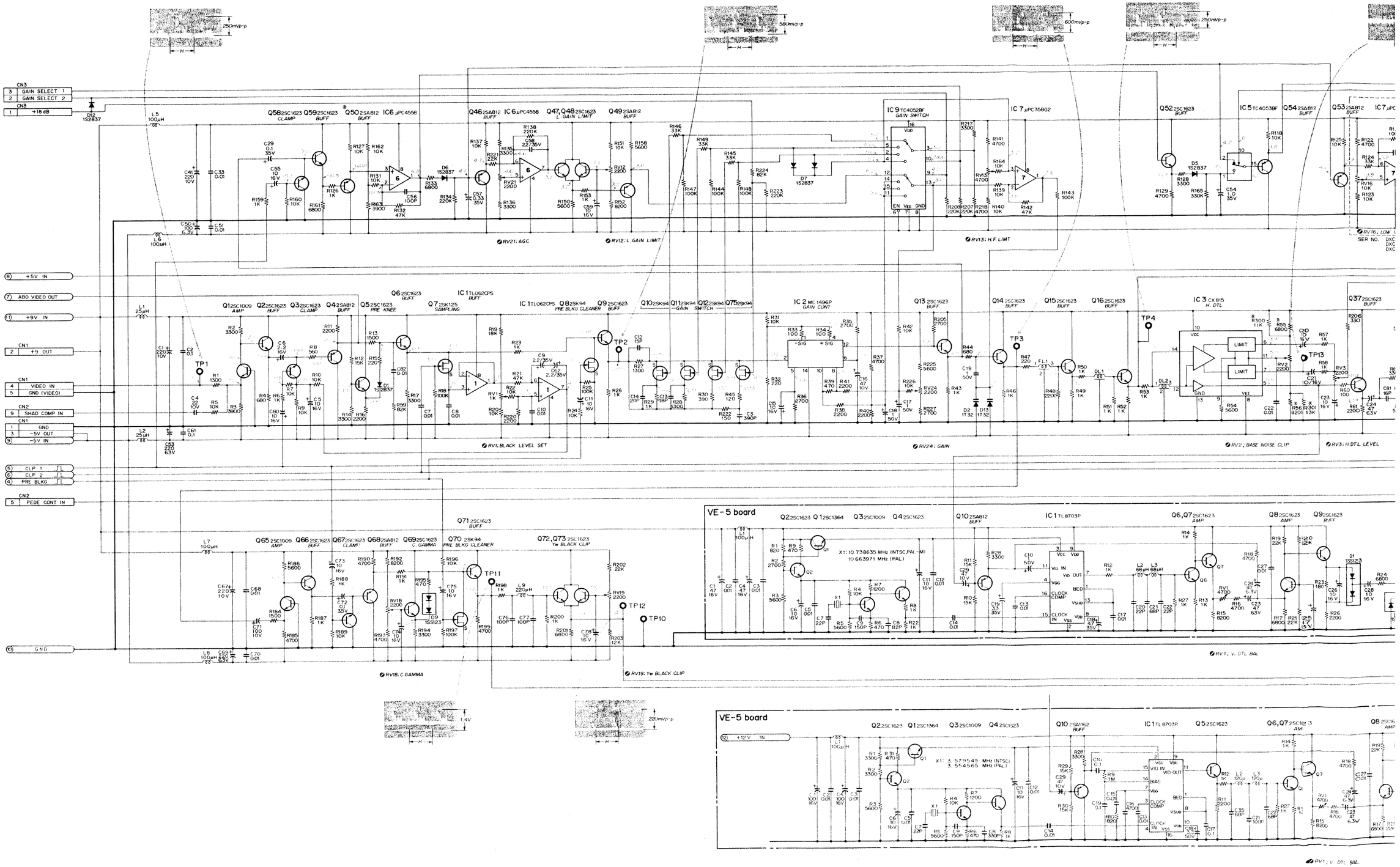
VE-5 BOARD

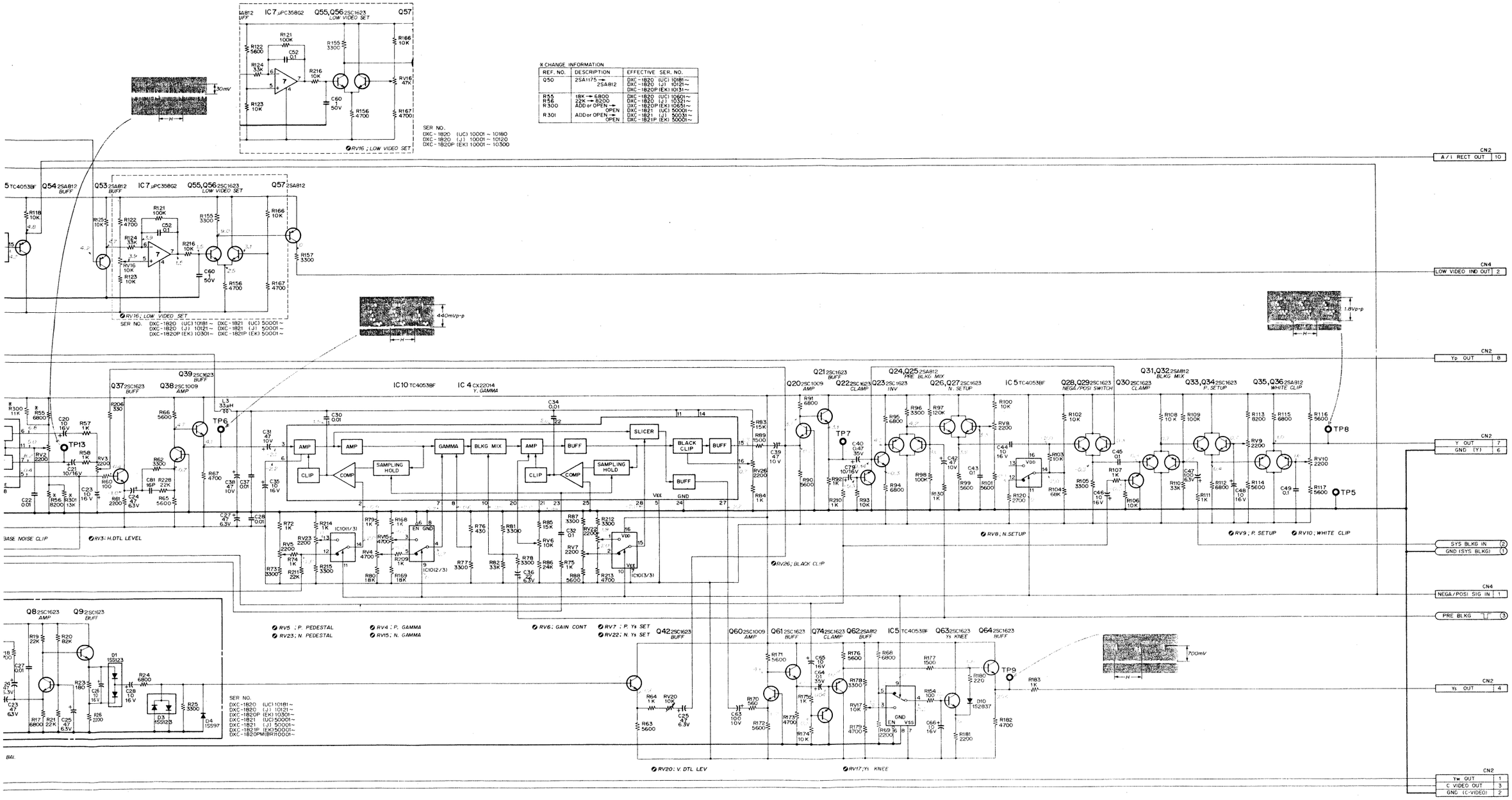
1-611-220-12

DXC-1820(UC) 10901～
DXC-1820(J) 10471～
DXC-1820P(EK)11401～
DXC-1821(UC) 50251～
DXC-1821(J) 50181～
DXC-1821P(EK) 50101～
DXC-1820PM(BR)10001～

CN1	E - 5	RV1	B - 4
CN2	C - 6	RV2	H - 2
CN3	G - 5	RV3	H - 2
CN4	G - 5	RV4	I - 4
		RV5	J - 4
D1	C - 3	RV6	J - 2
D2	A - 1	RV7	I - 4
D5	G - 5	RV8	F - 5
D6	D - 3	RV9	D - 7
D7	C - 2	RV10	D - 7
D9	B - 5	RV12	F - 3
D10	C - 8	RV13	F - 3
D12	G - 5	RV15	I - 5
D13	B - 1	RV16	F - 3
		RV17	H - 4
DL1	F - 3	RV18	B - 6
DL2	G - 3	RV19	A - 6
		RV20	F - 2
FL1	A - 1	RV21	D - 4
		RV22	I - 5
IC1	B - 4	RV23	J - 5
IC2	A - 3	RV24	B - 2
IC3	H - 3	RV26	J - 2
IC4	I - 2		
IC5	H - 5	TP1	F - 5
IC6	D - 2	TP2	B - 1
IC7	E - 1	TP3	A - 2
IC9	C - 1	TP4	G - 4
IC10	I - 3	TP5	C - 4
		TP6	H - 2
Q1	E - 5	TP7	G - 5
Q2	F - 4	TP8	C - 7
Q3	F - 4	TP9	C - 7
Q4	E - 4	TP10	C - 7
Q5	C - 3	TP11	A - 6
Q6	C - 3	TP12	B - 6
Q7	B - 4	TP13	H - 3
Q8	B - 3		
Q9	B - 3		
Q10	C - 1		
Q11	C - 2		
Q12	C - 1		
Q13	B - 4		
Q14	A - 2		
Q15	A - 1		
Q16	G - 3		
Q20	F - 6		
Q21	F - 6		
Q22	F - 7		
Q23	F - 7		
Q24	F - 7		
Q25	F - 7		
Q26	F - 8		
Q27	F - 8		
Q28	F - 7		
Q29	E - 7		
Q30	F - 7		
Q31	F - 8		
Q32	E - 8		
Q33	F - 8		
Q34	E - 8		
Q35	E - 8		
Q36	E - 8		
Q38	H - 3		
Q42	F - 2		
Q46	D - 3		
Q47	E - 2		
Q48	E - 3		
Q49	D - 2		
Q50	C - 2		
Q52	D - 3		
Q53	E - 2		
Q54	D - 4		
Q55	E - 2		
Q56	E - 2		
Q57	E - 2		
Q58	B - 2		
Q59	C - 2		
Q60	C - 8		
Q61	C - 8		
Q62	C - 8		
Q63	C - 8		
Q64	C - 7		
Q65	A - 5		
Q66	A - 5		
Q67	A - 5		
Q68	A - 5		
Q69	B - 6		
Q70	B - 5		
Q71	A - 5		
Q72	B - 6		
Q73	A - 6		
Q74	D - 7		
Q75	C - 2		

PR-46 BOARD
VE-5 BOARD





SER NO.
DXC-1820 (UC) 10001 ~ 10180
DXC-1820 (J) 10001 ~ 10120
DXC-1820P (EK) 10001 ~ 10300

X CHANGE INFORMATION

REF. NO.	DESCRIPTION	EFFECTIVE SER. NO.
Q50	2SA1175 → 2SA812	DXC-1820 (UC) 10181 ~ DXC-1820 (J) 10121 ~ DXC-1820P(EK) 10131 ~
R55 R56 R300	18K → 6800 22K → 8200 ADD or OPEN → OPEN	DXC-1820 (UC) 10601 ~ DXC-1820 (J) 10321 ~ DXC-1820P(EK) 10651 ~
R301	ADD or OPEN → OPEN	DXC-1821 (UC) 50001 ~ DXC-1821 (J) 50031 ~ DXC-1821P (EK) 50001 ~

SER NO.
DXC-1820 (UC) 10181 ~
DXC-1820 (J) 10121 ~
DXC-1820P (EK) 10301 ~
DXC-1821 (UC) 50001 ~
DXC-1821 (J) 50001 ~
DXC-1821P (EK) 50001 ~
DXC-1820PM(BRR0001 ~

SER NO.
DXC-1820 (UC) 10001 ~ 10180
DXC-1820 (J) 10001 ~ 10120
DXC-1820P (EK) 10001 ~ 10300

PR-46 BOARD
VE-5 BOARD
DXC-1820 (UC),(J)
DXC-1820P (EK)
DXC-1821 (UC),(J)
DXC-1821P (EK)
DXC-1820PM(BR)

NOTE:

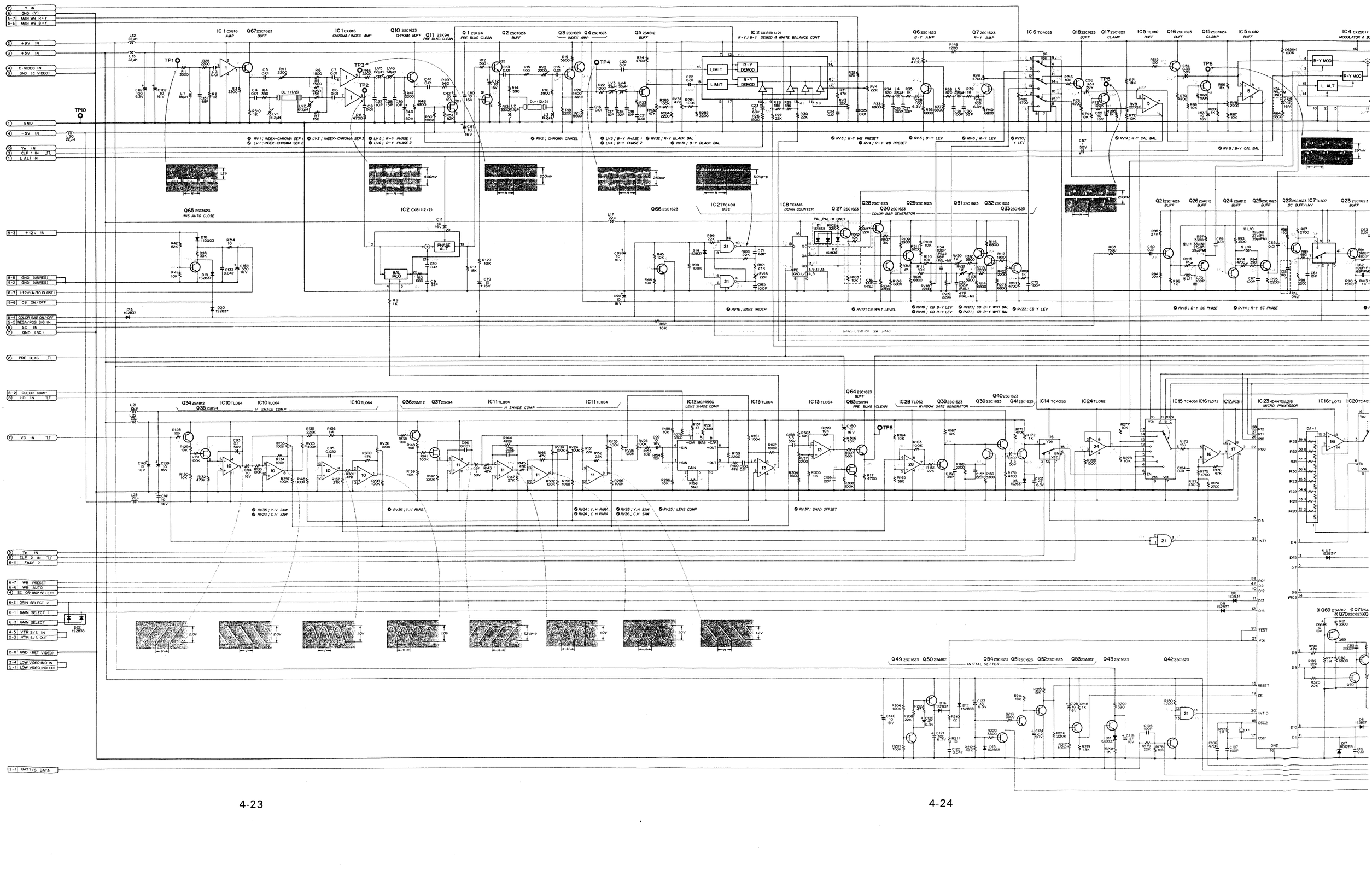
1. All voltages are dc, measured with a digital voltmeter (input resistance 10MΩ).
2. All waveforms are taken in condition below.
   - Set the filter knob to 1 position.
   - Shoot the color bar pattern on the pattern box(AUTO). Adjust the lens iris so that the white level at TP1/PR-46 board is 250mv.

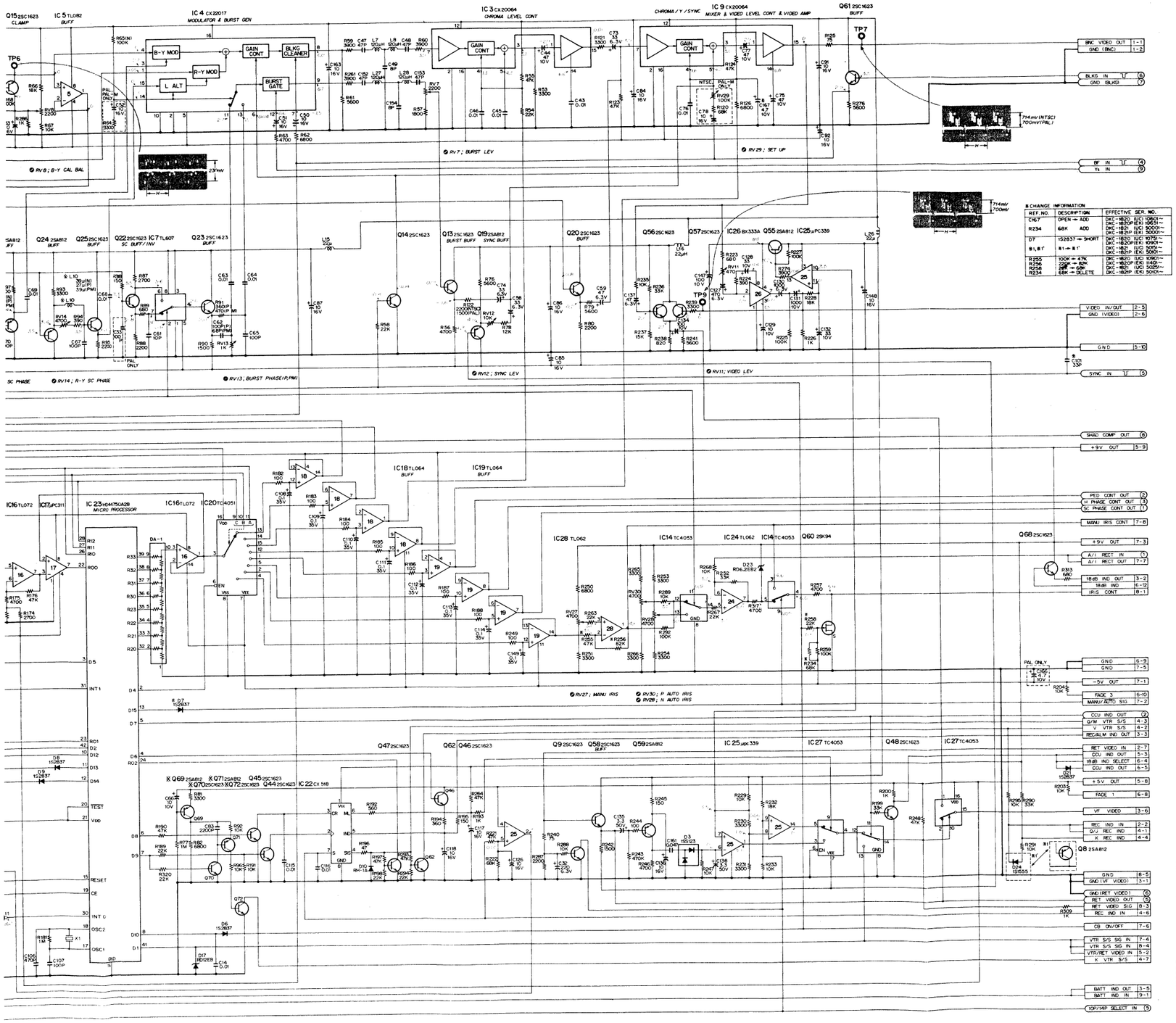
注意

1 DC電圧はデジタル電圧計(入力抵抗10MΩ)による値。

2 波形写真は下記条件で撮影。
- フィルター：1
- カラーバーパターンチャート(パターンボックス：AUTO)を撮影し、レンズ絞りにてTP1/PR-46基板の白レベルを250mVにする。
- カメラGAINスイッチ：0dB

CR-21 BOARD


IC 1 CX816 AMP
Q67 2SC1623 BUFF
IC 1 CX816 CHROMA/INDEX AMP
Q10 2SC1623 CHROMA BUFF
Q11 2SK94 PRE BLKG CLEAN
Q1 2SK94 PRE BLKG CLEAN
Q2 2SC1623 BUFF
Q3 2SC1623 Q4 2SC1623 INDEX AMP
Q5 2SA812 BUFF
IC 2 CX811(1/2) R-Y/B-Y DEMOD & WHITE BALANCE CONT
Q6 2SC1623 B-Y AMP
Q7 2SC1623 R-Y AMP
IC 6 TC4053
Q18 2SC1623 BUFF
Q17 2SC1623 CLAMP
IC 5 TL082 BUFF
Q16 2SC1623 BUFF
Q15 2SC1623 CLAMP
IC 5 TL082 BUFF
IC 4 CX22017 MODULATOR & DE
TP1
TP2
TP3
TP4
TP5
TP6
TP10
(1) GND
(4) −5V IN
(10) Yw IN
(3) CLP 1 IN
(1) L ALT IN
(9-3) +12V IN
(8-8) GND (UNREG)
(9-2) GND (UNREG)
(8-7) +12V (AUTO CLOSE)
(8-6) CB ON/OFF
(5-4) COLOR BAR ON/OFF
(5-5) NEGA/POSI SIG IN
(9) SC IN
(7) GND (SC)
(2) PRE BLKG
(8-2) COLOR COMP
(8) HD IN
(7) VD IN
(5) Yp IN
(6) CLP 2 IN
(6-11) FADE 2
(6-7) WB PRESET
(6-6) WB AUTO
(4) SC 0°/180° SELECT
(6-2) GAIN SELECT 2
(6-1) GAIN SELECT 1
(6-3) GAIN SELECT
(4-5) VTR S/S IN
(2-3) VTR S/S OUT
(2-8) GND (RET VIDEO)
(3-4) LOW VIDEO IND IN
(5-11) LOW VIDEO IND OUT
(2-1) BATT/S DATA
(9) Y IN
(6) GND (Y)
(5-7) MAN WB R-Y
(5-6) MAN WB B-Y
(2) +9V IN
(3) +5V IN
(4) C VIDEO IN
(5) GND (C VIDEO)
RV1; INDEX-CHROMA SEP 1
LV1; INDEX-CHROMA SEP 2
LV2; INDEX-CHROMA SEP 3
LV5; R-Y PHASE 1
LV6; R-Y PHASE 2
RV2; CHROMA CANCEL
LV3; B-Y PHASE 1
LV4; B-Y PHASE 2
RV32; R-Y BLACK BAL
RV31; B-Y BLACK BAL
RV3; B-Y WB PRESET
RV4; R-Y WB PRESET
RV5; B-Y LEV
RV6; R-Y LEV
RV10; Y LEV
RV9; R-Y CAL BAL
RV8; B-Y CAL BAL
Q65 2SC1623 IRIS AUTO CLOSE
IC 2 CX811(2/2)
Q66 2SC1623
IC 21 TC4011 OSC
IC 8 TC4516 DOWN COUNTER
Q 27 2SC1623
Q28 2SC1623 Q29 2SC1623 Q30 2SC1623 COLOR BAR GENERATOR
Q31 2SC1623 Q32 2SC1623 Q33 2SC1623
PAL, PAL-M ONLY
RV16; BARS WIDTH
RV17; CB WHT LEVEL
RV18; CB B-Y LEV
RV19; CB R-Y LEV
RV20; CB B-Y WHT BAL
RV21; CB R-Y WHT BAL
RV22; CB Y LEV
Q21 2SC1623 BUFF
Q26 2SA812 BUFF
Q24 2SA812 BUFF
Q25 2SC1623 BUFF
Q22 2SC1623 SC BUFF/INV
IC 7 TL607
Q23 2SC1623 BUFF
RV15; B-Y SC PHASE
RV14; R-Y SC PHASE
Q64 2SC1623 BUFF
Q63 2SK94 PRE BLKG CLEAN
IC 28 TL062 WINDOW GATE GENERATOR
Q38 2SC1623 Q39 2SC1623 Q40 2SC1623 Q41 2SC1623
IC 14 TC4053
IC 24 TL062
IC 15 TC4051 IC 16 TL072
IC 17 μPC311
IC 23 μPD7508AP8 MICRO PROCESSOR
IC 16 TL072
IC 20 TC4007
Q34 2SA812 Q35 2SK94
IC 10 TL064
V SHADE COMP
Q36 2SA812 Q37 2SK94
IC 11 TL064
H SHADE COMP
IC 12 MC14960 LENS SHADE COMP
IC 13 TL064
RV35; Y.V SAW
RV23; C.V SAW
RV36; Y.V PARA
RV34; Y.H PARA
RV24; C.H PARA
RV33; Y.H SAW
RV26; C.H SAW
RV25; LENS COMP
RV37; SHAD OFFSET
Q49 2SC1623 Q50 2SA812
Q54 2SC1623 Q51 2SC1623 Q52 2SC1623 Q53 2SA812 INITIAL SETTER
Q43 2SC1623
Q42 2SC1623
Q69
Q70
Q71
D22 1S2835



CHANGE INFORMATION		
REF.NO.	DESCRIPTION	EFFECTIVE SER. NO.
C167	OPEN → ADD	DXC-1820 (UC) 10601~ DXC-1820P(EK) 10651~
R234	68K ADD	DXC-1821 (UC) 50001~ DXC-1821P (EK) 50001~
D7	IS2837 → SHORT	DXC-1820 (UC) 10751~ DXC-1820P(EK) 10901~
※1, ※1'	※1 → ※1'	DXC-1821 (UC) 50151~ DXC-1821P (EK) 50901~
R255	100K → 47K	DXC-1820 (UC) 10901~
R256	220K → 82K	DXC-1820P(EK) 11451~
R258	2M → 68K	DXC-1821 (UC) 50251~
R234	68K → DELETE	DXC-1821P (EK) 50101~

※ CHANGE INFORMATION
C101 33P → DELETE
Q69, Q71 2SA1175 → 2SA812
Q70, Q72 2SC2705 → 2SC1623
DXC-1820 (UC) 10181~
DXC-1820 (J) 10121~
DXC-1820P (EK) 10131~
DXC-1821 (UC)J 50000~
DXC-1821P (EK) 50001~

CR-21 BOARD
DXC-1820 (UC)(J)
DXC-1820P (EK)
DXC-1821 (UC)(J)
DXC-1821P (EK)
DXC-1820PM(BR)

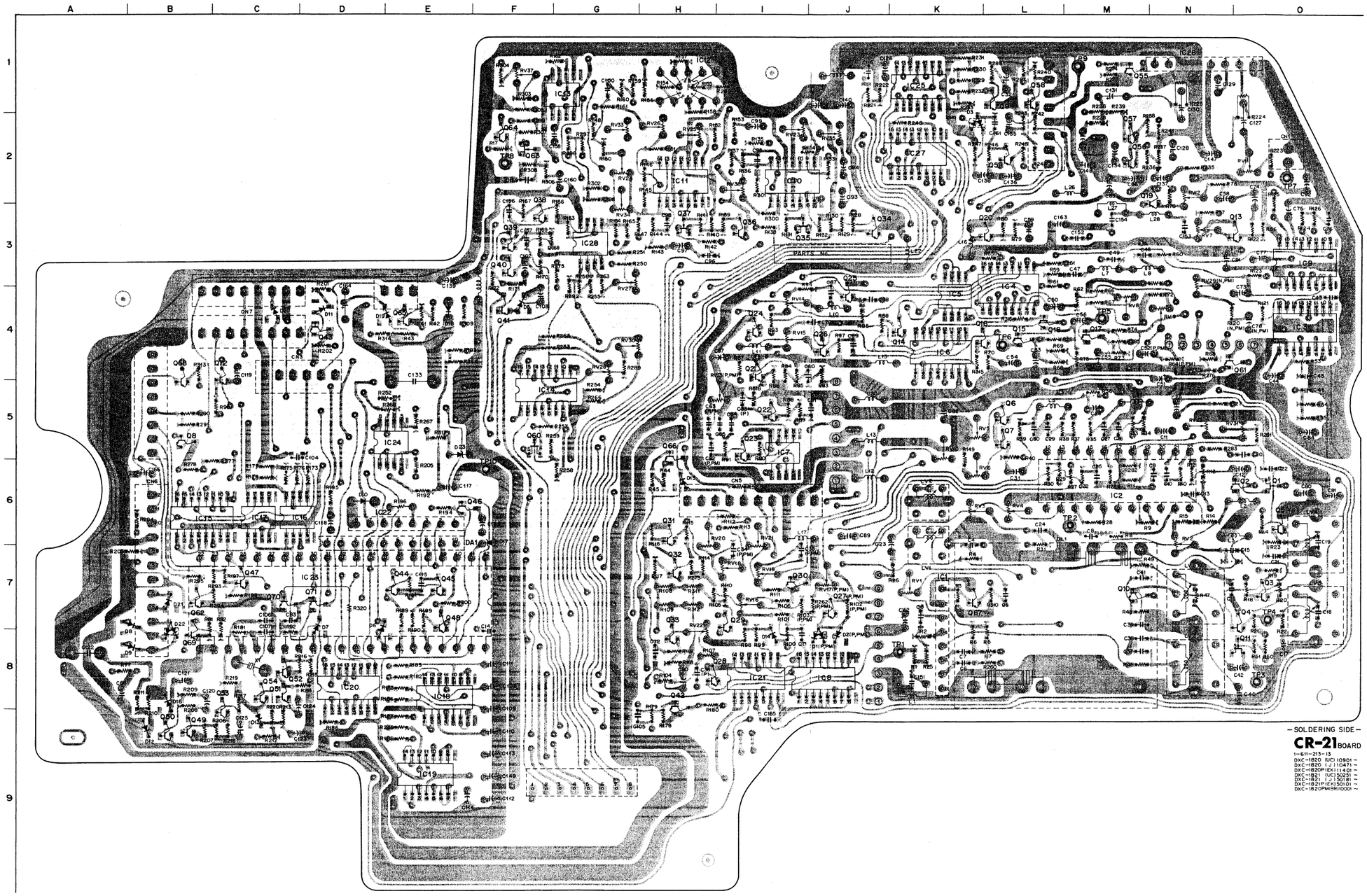
NOTE:

1. All voltages are dc, measured with a digital voltmeter (input resistance 10MΩ).
2. All waveforms are taken in condition below.
   - Set the filter knob to 1 position.
   - Shoot the color-bar pattern on the pattern box(AUTO). Adjust the lens iris so that the white level at TP1/PR-46 board is 250mv.

注意

1. DC電圧はデジタル電圧計(入力抵抗10MΩ)による値。
2. 波形写真は下記条件で撮影。
   - フィルター：1
   - カラーバーパターンチャート(パターンボックス：AUTO)を撮影し、レンズ絞りにてTP1/PR-46基板のf1レベルを250mVにする。
   - カメラGAINスイッチ：0dB

CR-21 BOARD
ENCORDER
COLOR BAR GEN
AUTO WHITE BAL
SHADING CORRECT



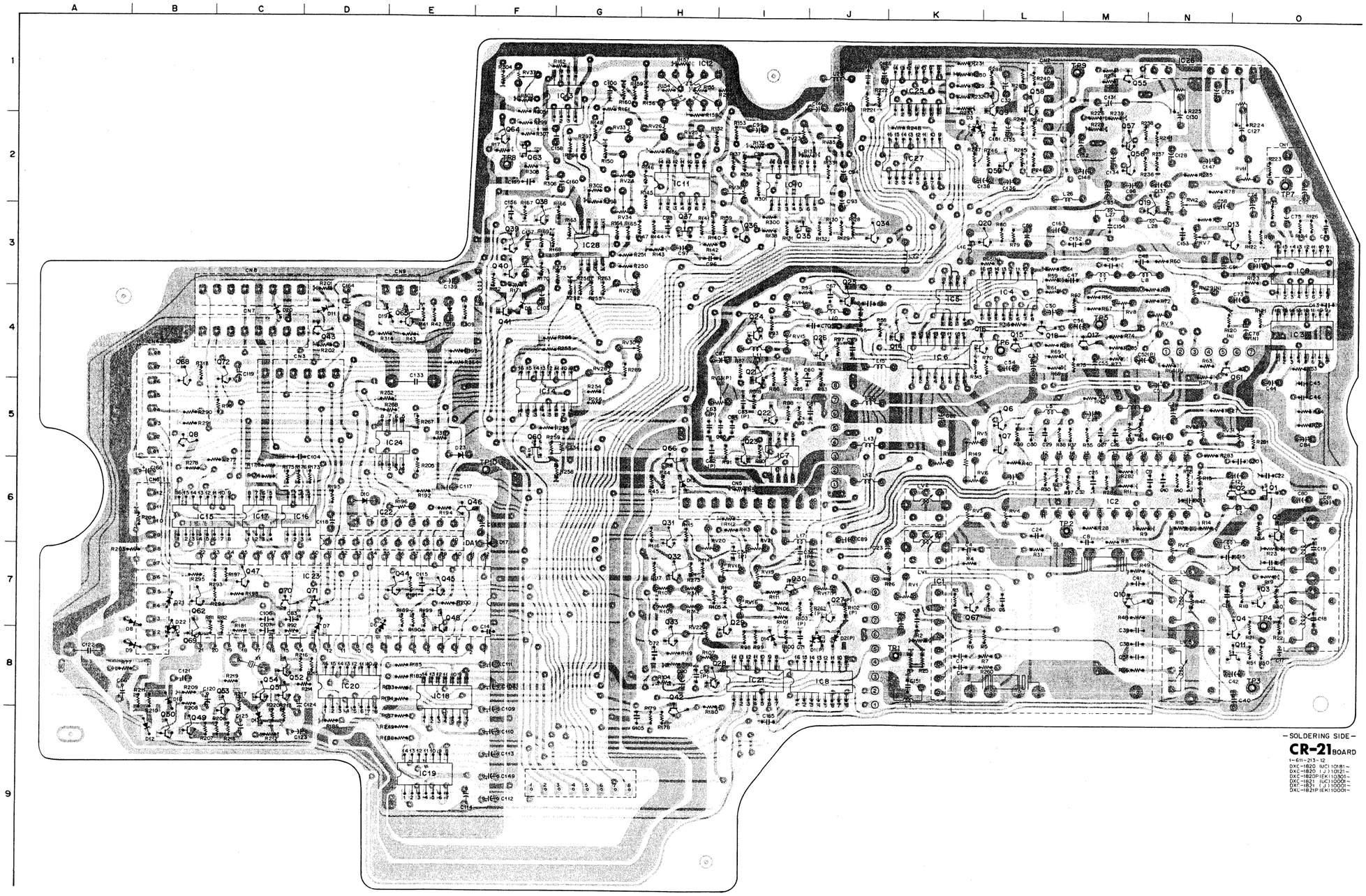
CN1	O-2	Q31	H-7
CN2	L-1	Q32	H-7
CN3	C-4	Q33	H-8
CN4	B-5	Q34	J-3
CN5	I-6	Q35	I-3
CN6	B-7	Q36	I-3
CN7	C-4	Q37	H-3
CN8	C-4	Q38	F-3
CN9	E-4	Q39	F-3
		Q40	F-3
D1	J-8	Q41	F-4
D2	J-8	Q42	H-9
D3	K-2	Q43	D-4
D5	F-4	Q44	E-7
D6	D-8	Q45	E-7
D7	D-8	Q46	E-6
D8	B-7	Q47	C-7
D9	B-8	Q48	E-8
D10	D-6	Q49	B-9
D11	D-4	Q50	B-9
D12	B-9	Q51	C-8
D13	C-9	Q52	C-8
D14	I-8	Q53	C-9
D15	H-6	Q54	C-8
D16	B-8	Q55	M-1
D17	F-7	Q56	M-2
D18	E-4	Q57	M-2
D19	E-4	Q58	L-1
D20	C-4	Q59	L-2
D21	B-7	Q60	F-5
D22	B-8	Q61	N-4
D23	E-5	Q62	B-7
		Q63	F-2
DA1	E-7	Q64	F-2
		Q65	E-4
DL1	L-8	Q66	H-6
		Q67	K-7
IC1	K-8	Q68	B-4
IC2	M-6	Q69	B-8
IC3	O-4	Q70	C-7
IC4	L-4	Q71	D-7
IC5	K-4	Q72	C-5
IC6	K-4		
IC7	I-5	RV1	K-7
IC8	J-8	RV2	N-7
IC9	O-3	RV3	K-6
IC10	I-2	RV4	L-4
IC11	H-2	RV5	K-5
IC12	H-1	RV6	K-6
IC13	G-1	RV7	N-3
IC14	F-5	RV8	M-4
IC15	B-6	RV9	N-4
IC16	C-6	RV10	K-5
IC17	C-6	RV11	O-2
IC18	E-8	RV12	N-2
IC19	E-9	RV13	I-5
IC20	D-8	RV14	I-4
IC21	I-8	RV15	I-4
IC22	E-6	RV16	I-7
IC23	D-7	RV17	J-7
IC25	K-1	RV18	I-7
IC26	N-1	RV19	I-7
IC27	K-2	RV20	H-7
		RV21	I-6
LV1	K-7	RV22	H-8
LV2	K-6	RV23	I-2
LV3	O-7	RV24	G-2
LV4	O-7	RV25	H-2
LV5	N-8	RV26	H-2
LV6	N-7	RV27	G-4
		RV28	G-4
Q1	O-6	RV29	N-4
Q2	O-6	RV30	G-4
Q3	O-7	RV31	O-5
Q4	O-8	RV32	N-5
Q5	O-6	RV33	G-2
Q6	L-5	RV34	G-3
Q7	L-5	RV35	J-2
Q8	B-5	RV36	I-2
Q9	L-1	RV37	F-1
Q10	M-7		
Q11	O-8	TP1	K-8
Q13	O-3	TP2	M-6
Q14	K-4	TP3	O-8
Q15	L-4	TP4	O-7
Q16	L-4	TP5	M-4
Q17	M-4	TP6	L-4
Q18	L-4	TP7	O-2
Q19	N-3	TP8	F-2
Q20	L-3	TP9	M-1
Q21	I-5	TP10	F-6
Q22	I-5		
Q23	I-5	X1	C-8
Q24	I-4		
Q25	J-4		
Q26	J-4		
Q27	J-7		
Q28	I-8		
Q29	I-8		
Q30	I-7		

— SOLDERING SIDE —

CR-21 BOARD

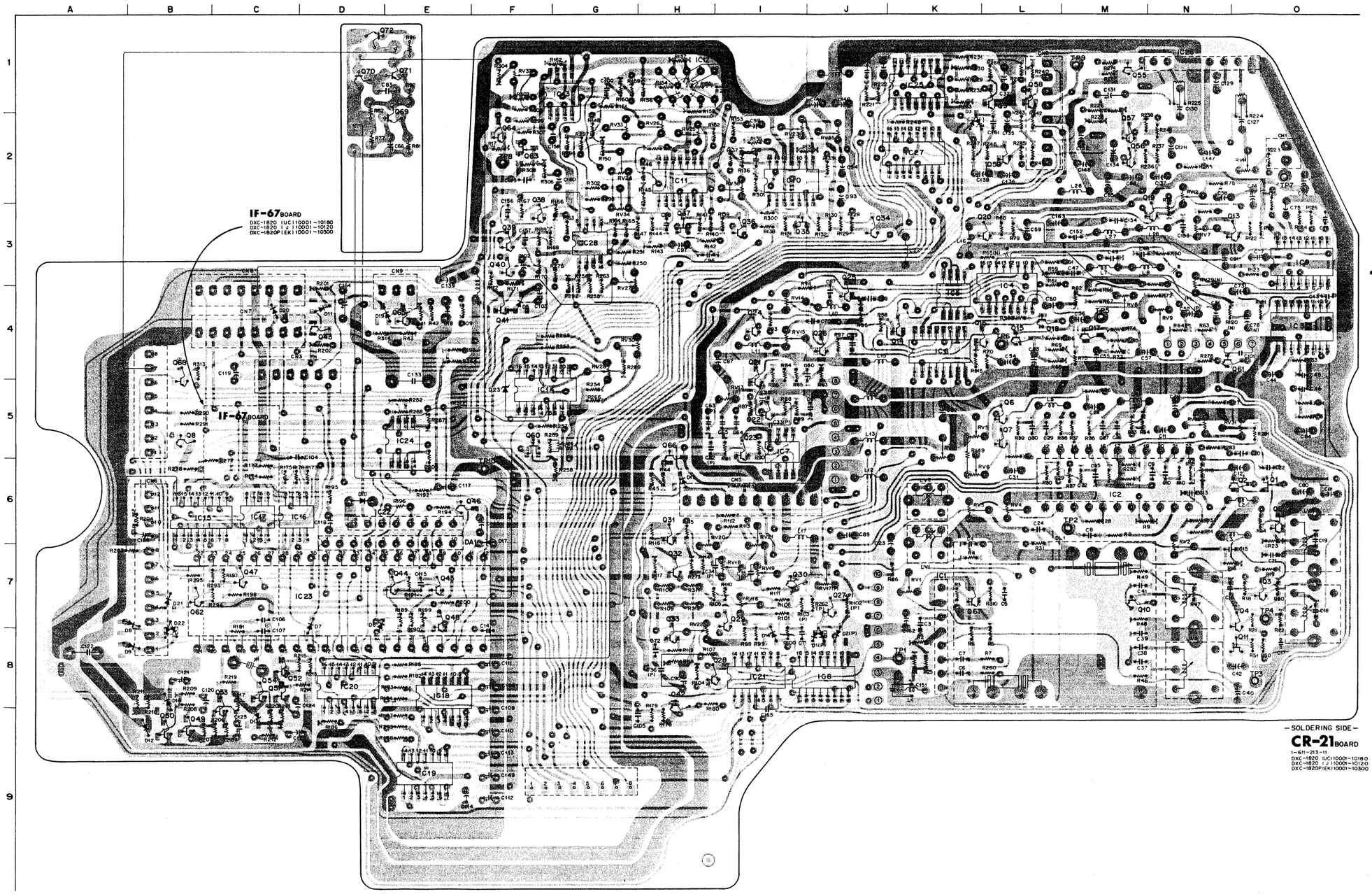
1-611-213-13
DXC-1820 (UC) 10901 ~
DXC-1820 (J) 10471 ~
DXC-1820P (EK) 11401 ~
DXC-1821 (UC) 50251 ~
DXC-1821 (J) 50181 ~
DXC-1821P (EK) 50101 ~
DXC-1820PMRRH0001 ~

CR-21 BOARD
ENCORDER
COLOR BAR GEN
AUTO WHITE BAL
SHADING CORRECT

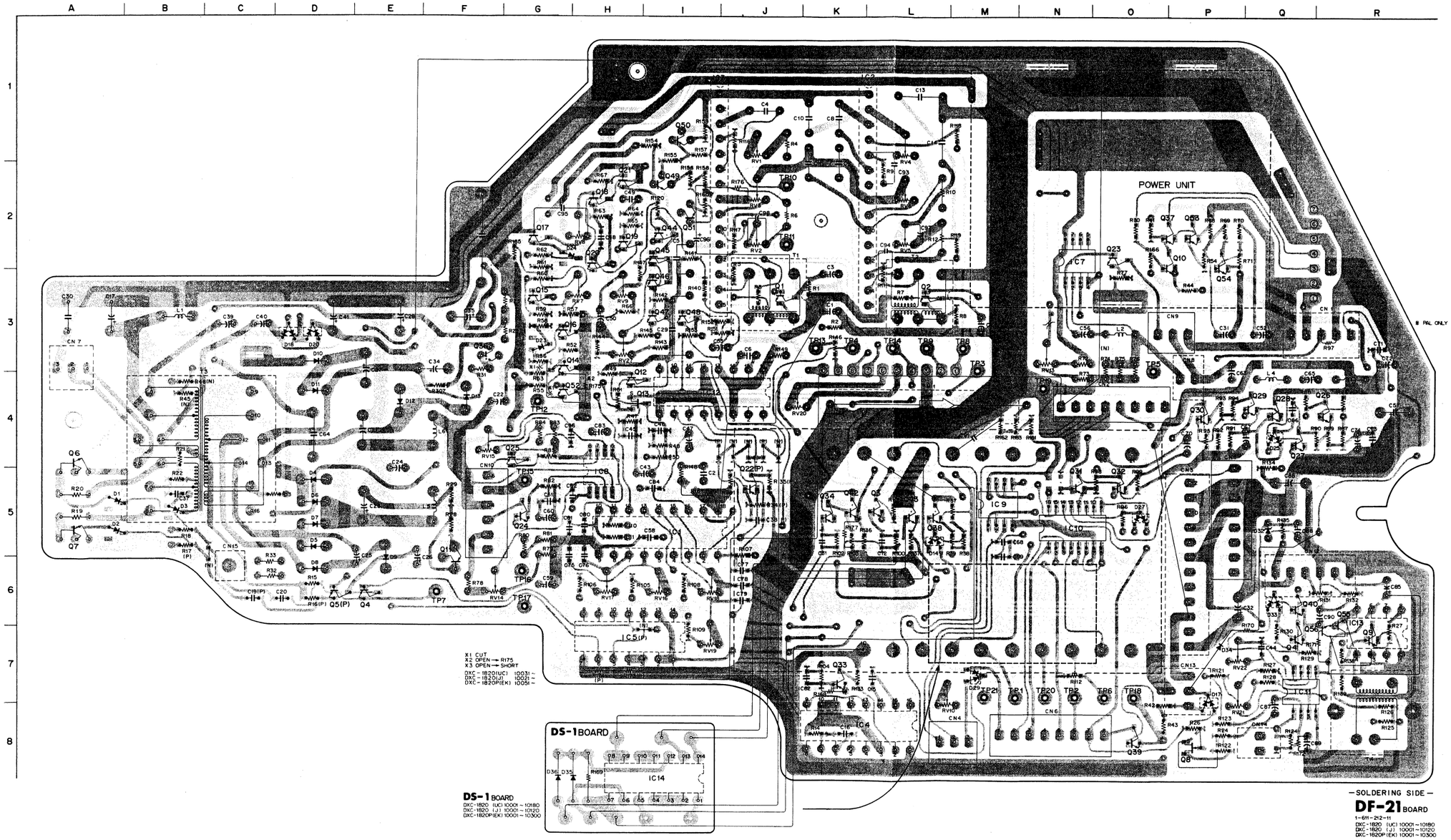

A B C D E F G H I J K L M N O
1 2 3 4 5 6 7 8 9
IC1 IC2 IC3 IC4 IC5 IC6 IC7 IC8 IC9 IC10 IC11 IC12 IC13 IC14 IC15 IC16 IC17 IC18 IC19 IC20 IC21 IC22 IC23 IC24 IC25 IC26 IC27 IC28
CN1 CN2 CN3 CN4 CN5 CN6 CN7 CN8 CN9
TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10
X1
DA1 DA2
RV1 RV2 RV3 RV4 RV5 RV6 RV7 RV8 RV9 RV10 RV11 RV12 RV13 RV14 RV15 RV16 RV17 RV18 RV19 RV20 RV21 RV22 RV23 RV24 RV25 RV26 RV27 RV28 RV29 RV30 RV31 RV32 RV33 RV34 RV35 RV36 RV37
- SOLDERING SIDE -
CR-21 BOARD
1-611-213-12
DXC-1820 (UC) 10181~
DXC-1820, (J) 11012~
DXC-1820P (EK) 10301~
DXC-1821 (UC) 10001~
DXC-1821 (J) 10001~
DXL-1821P (EK) 10001~

CN1	O - 2	Q31	H - 7
CN2	L - 1	Q32	H - 7
CN3	C - 4	Q33	H - 8
CN4	B - 5	Q34	J - 3
CN5	I - 6	Q35	I - 3
CN6	B - 7	Q36	I - 3
CN7	C - 4	Q37	H - 3
CN8	C - 4	Q38	F - 3
CN9	E - 4	Q39	F - 3
		Q40	F - 3
D1	J - 8	Q41	F - 4
D2	J - 8	Q42	H - 9
D3	K - 2	Q43	D - 4
D5	F - 4	Q44	E - 7
D6	D - 8	Q45	E - 7
D7	D - 8	Q46	E - 6
D8	B - 7	Q47	C - 7
D9	B - 8	Q48	E - 8
D10	D - 6	Q49	B - 9
D11	D - 4	Q50	B - 9
D12	B - 9	Q51	C - 8
D13	C - 9	Q52	C - 8
D14	F - 8	Q53	C - 9
D15	H - 6	Q54	C - 8
D16	B - 8	Q55	M - 1
D17	F - 7	Q56	M - 2
D18	E - 4	Q57	M - 2
D19	E - 4	Q58	L - 1
D20	C - 4	Q59	L - 2
D21	B - 7	Q60	F - 5
D22	B - 8	Q61	N - 4
D23	E - 5	Q62	B - 7
		Q63	F - 2
DA1	E - 7	Q64	F - 2
		Q65	E - 4
DL1	L - 8	Q66	H - 6
		Q67	K - 7
IC1	K - 8	Q68	B - 4
IC2	M - 6	Q69	B - 8
IC3	O - 4	Q70	C - 7
IC4	L - 4	Q71	D - 7
IC5	K - 4	Q72	C - 5
IC6	K - 4		
IC7	I - 5	RV1	K - 7
IC8	J - 8	RV2	N - 7
IC9	O - 3	RV3	K - 6
IC10	I - 2	RV4	L - 4
IC11	H - 2	RV5	K - 5
IC12	H - 1	RV6	K - 6
IC13	G - 1	RV7	N - 3
IC14	F - 5	RV8	M - 4
IC15	B - 6	RV9	N - 4
IC16	C - 6	RV10	K - 5
IC17	C - 6	RV11	O - 2
IC18	E - 8	RV12	N - 2
IC19	E - 9	RV13	I - 5
IC20	D - 8	RV14	I - 4
IC21	I - 8	RV15	I - 4
IC22	E - 6	RV16	I - 7
IC23	D - 7	RV17	J - 7
IC25	K - 1	RV18	I - 7
IC26	N - 1	RV19	I - 7
IC27	K - 2	RV20	H - 7
		RV21	I - 6
LV1	K - 7	RV22	H - 8
LV2	K - 6	RV23	I - 2
LV3	O - 7	RV24	G - 2
LV4	O - 7	RV25	H - 2
LV5	N - 8	RV26	H - 2
LV6	N - 7	RV27	G - 4
		RV28	G - 4
Q1	O - 6	RV29	N - 4
Q2	O - 6	RV30	G - 4
Q3	O - 7	RV31	O - 5
Q4	O - 8	RV32	N - 5
Q5	O - 6	RV33	G - 2
Q6	L - 5	RV34	G - 3
Q7	L - 5	RV35	J - 2
Q8	B - 5	RV36	I - 2
Q9	L - 1	RV37	F - 1
Q10	M - 7		
Q11	O - 8	TP1	K - 8
Q13	O - 3	TP2	M - 6
Q14	K - 4	TP3	O - 8
Q15	L - 4	TP4	O - 7
Q16	L - 4	TP5	M - 4
Q17	M - 4	TP6	L - 4
Q18	L - 4	TP7	O - 2
Q19	N - 3	TP8	F - 2
Q20	L - 3	TP9	M - 1
Q21	I - 5	TP10	F - 6
Q22	I - 5		
Q23	I - 5	X1	C - 8
Q24	I - 4		
Q25	J - 4		
Q26	J - 4		
Q27	J - 7		
Q28	I - 8		
Q29	I - 8		
Q30	I - 7		

CR-21 BOARD
ENCORDER
CLOLOR BAR GEN
AUTO WHITE BAL
SHADING CORRECT

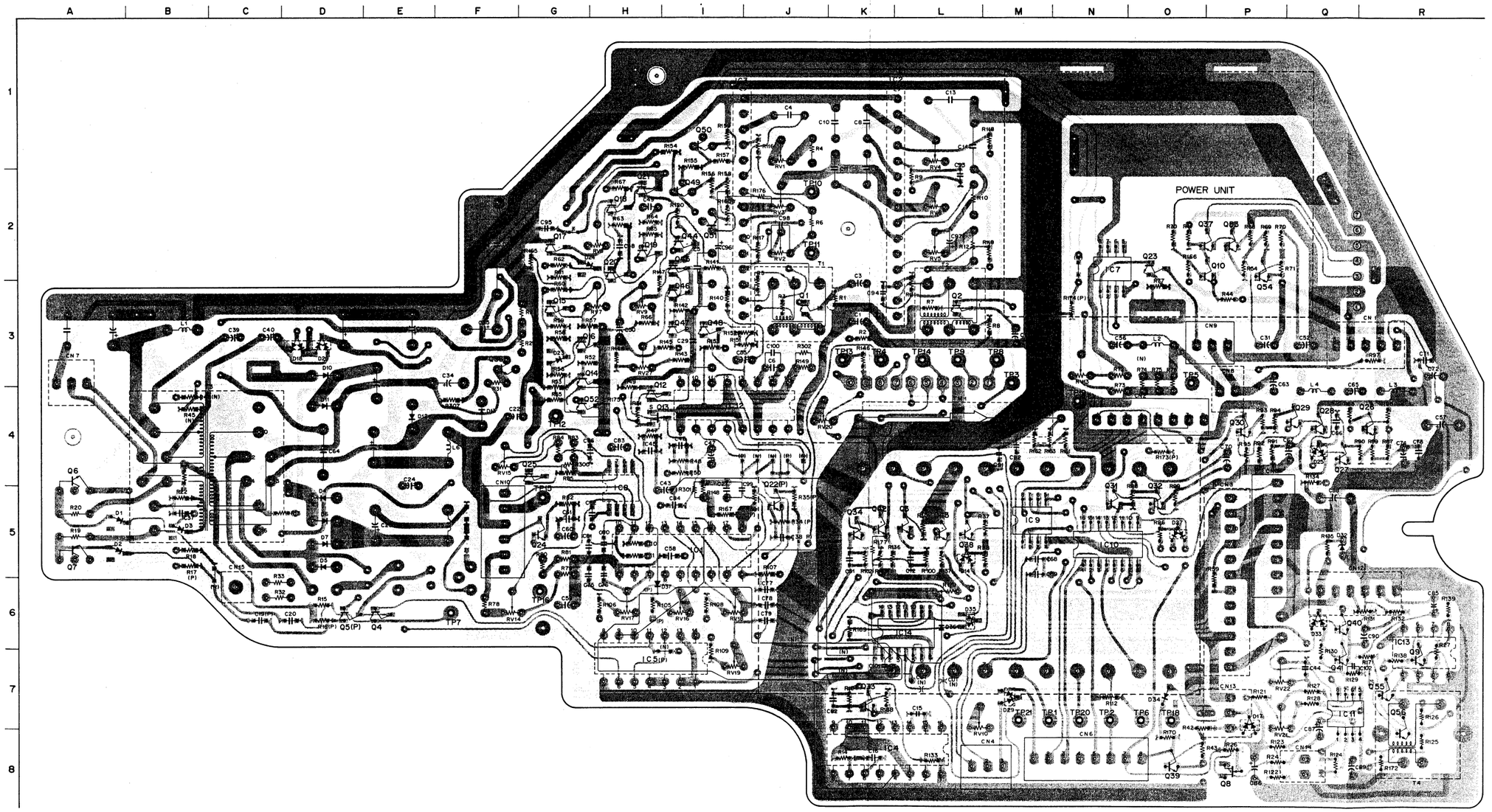

IF-67 BOARD
DXC-1820 (UC) 10001 ~ 10180
DXC-1820 (J) 10001 ~ 10120
DXC-1820P (EK) 10001 ~ 10300
IF-67 BOARD
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
IC20
IC21
IC22
IC23
IC24
IC26
IC27
IC28
DA1
DL1
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
X1
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
RV1
RV2
RV3
RV4
RV5
RV6
RV7
RV8
RV9
RV10
RV11
RV12
RV13
RV14
RV15
RV16
RV17
RV18
RV19
RV20
RV21
RV22
RV23
RV24
RV25
RV26
RV27
RV28
RV29
RV30
RV31
RV32
RV33
RV34
RV35
RV36
RV37
LV1
LV2
LV3
LV4
LV5
LV6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q29
Q30
Q31
Q32
Q33
Q34
Q35
Q36
Q37
Q38
Q39
Q40
Q41
Q42
Q43
Q44
Q45
Q46
Q47
Q48
Q49
Q50
Q51
Q52
Q53
Q54
Q55
Q56
Q57
Q58
Q59
Q60
Q61
Q62
Q63
Q64
Q65
Q66
Q67
Q68
Q69
Q70
Q71
Q72
IF-67 BOARD
IF-67 BOARD
IF-67 BOARD

DF-21 BOARD
DEFLECTION
ABO
POWER SUPPLY
SYNC GEN



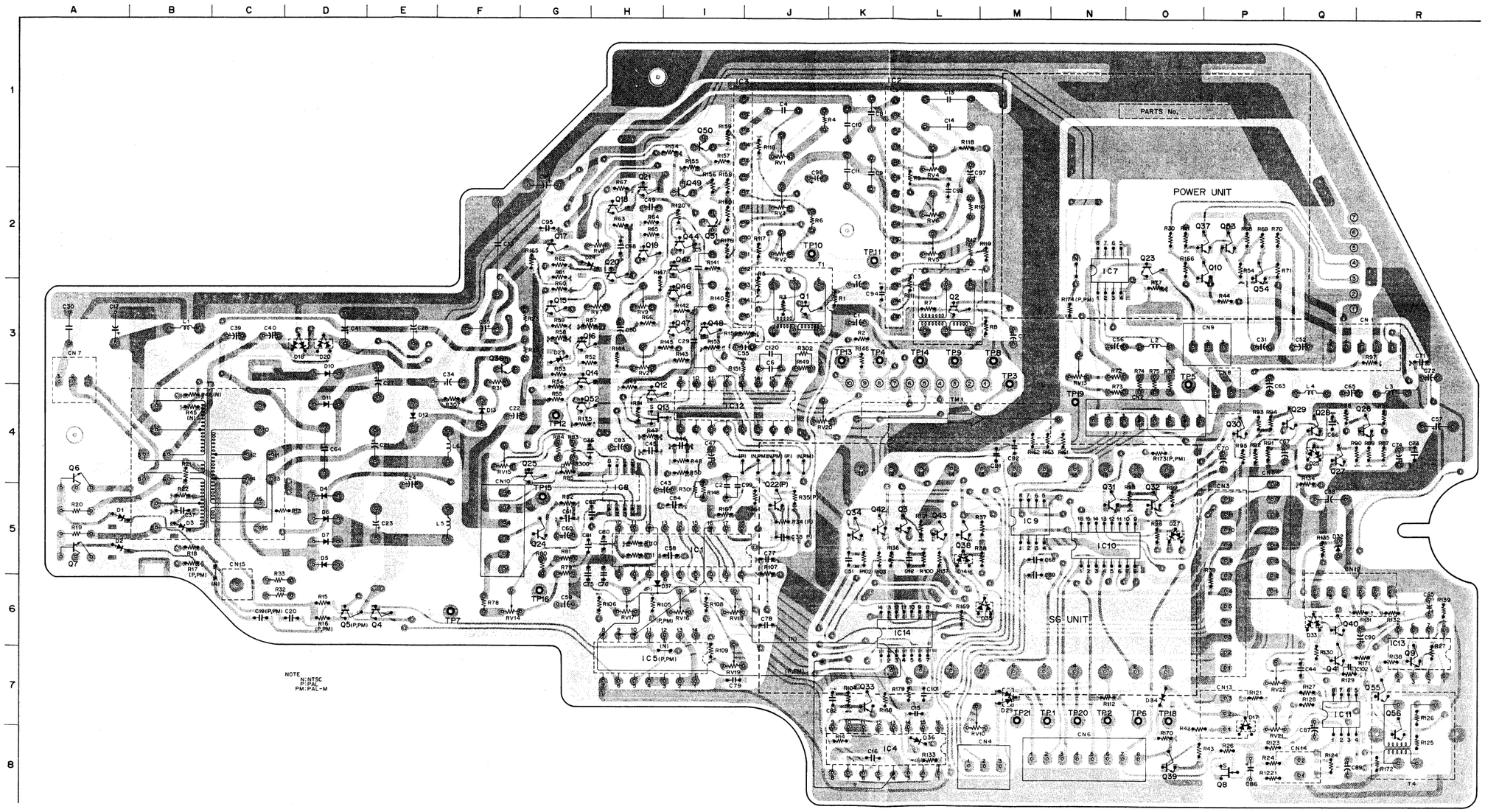
CN1	R-3	RV1	J-1
CN2	O-4	RV2	J-2
CN3	P-6	RV3	J-2
CN4	M-8	RV4	L-1
CN5	P-5	RV5	L-2
CN6	N-8	RV6	L-2
CN7	A-3	RV7	H-3
CN8	P-4	RV8	H-2
CN9	P-3	RV9	H-3
CN10	F-5	RV10	M-7
CN12	Q-6	RV13	N-3
CN13	P-7	RV14	F-6
CN14	Q-8	RV15	F-4
CN15	C-6	RV16	I-6
		RV17	H-6
D1	A-5	RV18	I-6
D2	A-5	RV19	I-7
D3	B-5	RV20	J-4
D4	D-5	RV21	Q-7
D5	D-5	RV22	Q-7
D6	D-5	RV27	H-3
D7	D-5		
D8	D-6	T1	J-3
D9	E-6	T2	L-3
D10	D-3	T3	C-4
D11	D-4	T4	R-8
D12	E-4		
D13	F-4	TM1	L-4
D14	L-5		
D17	P-7	TP1	M-7
D18	D-3	TP2	N-7
D20	D-3	TP3	M-3
D23	G-3	TP4	K-3
D24	H-2	TP5	O-3
D25	Q-4	TP6	O-7
D27	O-5	TP7	F-6
D29	M-7	TP8	M-3
D32	Q-5	TP9	L-3
D33	Q-6	TP10	J-2
D34	Q-6	TP11	J-2
D35	DS-1 BOARD	TP12	G-4
D36	DS-1 BOARD	TP13	K-3
		TP14	L-3
IC1	I-5	TP15	G-5
IC2	L-2	TP16	G-6
IC3	J-2	TP17	G-6
IC4	L-8	TP18	O-7
IC5	H-7	TP19	N-4
IC7	N-2	TP20	N-7
IC8	H-5	TP21	M-7
IC9	M-5		
IC10	N-5		
IC11	O-7		
IC12	I-4		
IC13	R-6		
IC14	DS-1BOARD		
Q1	J-3		
Q2	L-3		
Q3	L-5		
Q4	E-6		
Q5	D-6		
Q6	A-4		
Q7	A-5		
Q8	P-8		
Q9	R-7		
Q10	P-2		
Q11	F-6		
Q12	H-4		
Q13	H-4		
Q14	G-3		
Q15	G-3		
Q16	G-3		
Q17	G-2		
Q18	H-2		
Q19	H-2		
Q20	H-2		
Q21	H-2		
Q22	J-5		
Q23	O-2		
Q24	G-5		
Q25	G-4		
Q26	R-4		
Q27	O-4		
Q28	O-4		
Q29	O-4		
Q30	P-4		
Q31	N-5		
Q32	O-5		
Q33	K-7		
Q34	K-5		
Q36	F-3		
Q37	P-2		
Q38	L-5		
Q39	O-8		
Q40	Q-6		
Q41	Q-7		
Q42	K-5		
Q43	L-5		
Q44	I-2		
Q45	I-2		
Q46	I-3		
Q47	I-3		
Q48	I-3		
Q49	I-2		
Q50	I-1		
Q51	I-2		
Q52	G-4		
Q53	P-2		
Q54	P-2		
Q55	R-6		
Q56	R-6		

DF-21 BOARD
DEFLECTION
ABO
POWER SUPPLY
SYNC GEN



CN1	R-3	RV1	J-1	Q1	J-3	IC1	I-5
CN2	O-4	RV2	J-2	Q2	L-3	IC2	L-2
CN3	P-6	RV3	J-2	Q3	L-5	IC3	J-2
CN4	M-8	RV4	L-1	Q4	E-6	IC4	L-8
CN5	P-5	RV5	L-2	Q5	D-6	IC5	H-7
CN6	N-8	RV6	L-2	Q6	A-4	IC7	N-2
CN7	A-3	RV7	H-3	Q7	A-5	IC8	H-5
CN8	P-4	RV8	H-2	Q8	P-8	IC9	M-5
CN9	P-3	RV9	H-3	Q9	R-7	IC10	M-5
CN10	F-5	RV10	M-7	Q10	P-2	IC11	Q-7
CN12	Q-6	RV13	N-3	Q12	H-4	IC12	I-4
CN13	P-7	RV14	F-6	Q13	H-4	IC13	R-6
CN14	Q-8	RV15	F-4	Q14	G-3	IC14	L-6
CN15	C-6	RV16	I-6	Q15	G-3		
		RV17	H-6	Q16	G-3		
D1	A-5	RV18	I-6	Q17	G-2		
D2	A-5	RV19	I-7	Q18	H-2		
D3	B-5	RV20	J-4	Q19	H-2		
D4	D-5	RV21	O-7	Q20	H-2		
D5	D-5	RV22	O-7	Q21	H-2		
D6	D-5	RV27	H-3	Q22	J-5		
D7	D-5			Q23	O-2		
D10	D-3	T1	J-3	Q24	G-5		
D11	D-4	T2	L-3	Q25	G-4		
D12	E-4	T3	C-4	Q26	R-4		
D13	F-4	T4	R-8	Q27	O-4		
D14	L-5			Q28	O-4		
D17	P-7	TM1	L-4	Q29	O-4		
D18	D-3			Q30	P-4		
D20	D-3	TP1	M-7	Q31	N-5		
D23	G-3	TP2	N-7	Q32	O-5		
D24	H-2	TP3	M-3	Q33	K-7		
D25	Q-4	TP4	K-3	Q34	K-5		
D27	Q-5	TP5	O-3	Q36	F-3		
D29	M-7	TP6	O-7	Q37	P-2		
D32	Q-5	TP7	F-6	Q38	L-5		
D33	Q-6	TP8	M-3	Q39	O-8		
D34	O-7	TP9	L-3	Q40	O-6		
D35	L-6	TP10	J-2	Q41	Q-7		
D36	L-6	TP11	J-2	Q42	K-5		
D37	H-6	TP12	G-4	Q43	L-5		
		TP13	K-3	Q44	I-2		
		TP14	L-3	Q45	I-2		
		TP15	G-5	Q46	I-3		
		TP16	G-6	Q47	I-3		
		TP18	O-7	Q48	I-3		
		TP19	N-4	Q49	I-2		
		TP20	N-7	Q50	I-1		
		TP21	M-7	Q51	I-2		
				Q52	G-4		
				Q53	P-2		
				Q54	P-2		
				Q55	R-7		
				Q56	R-7		

DF-21 BOARD
DEFLECTION
ABO
POWER SUPPLY
SYNC GEN



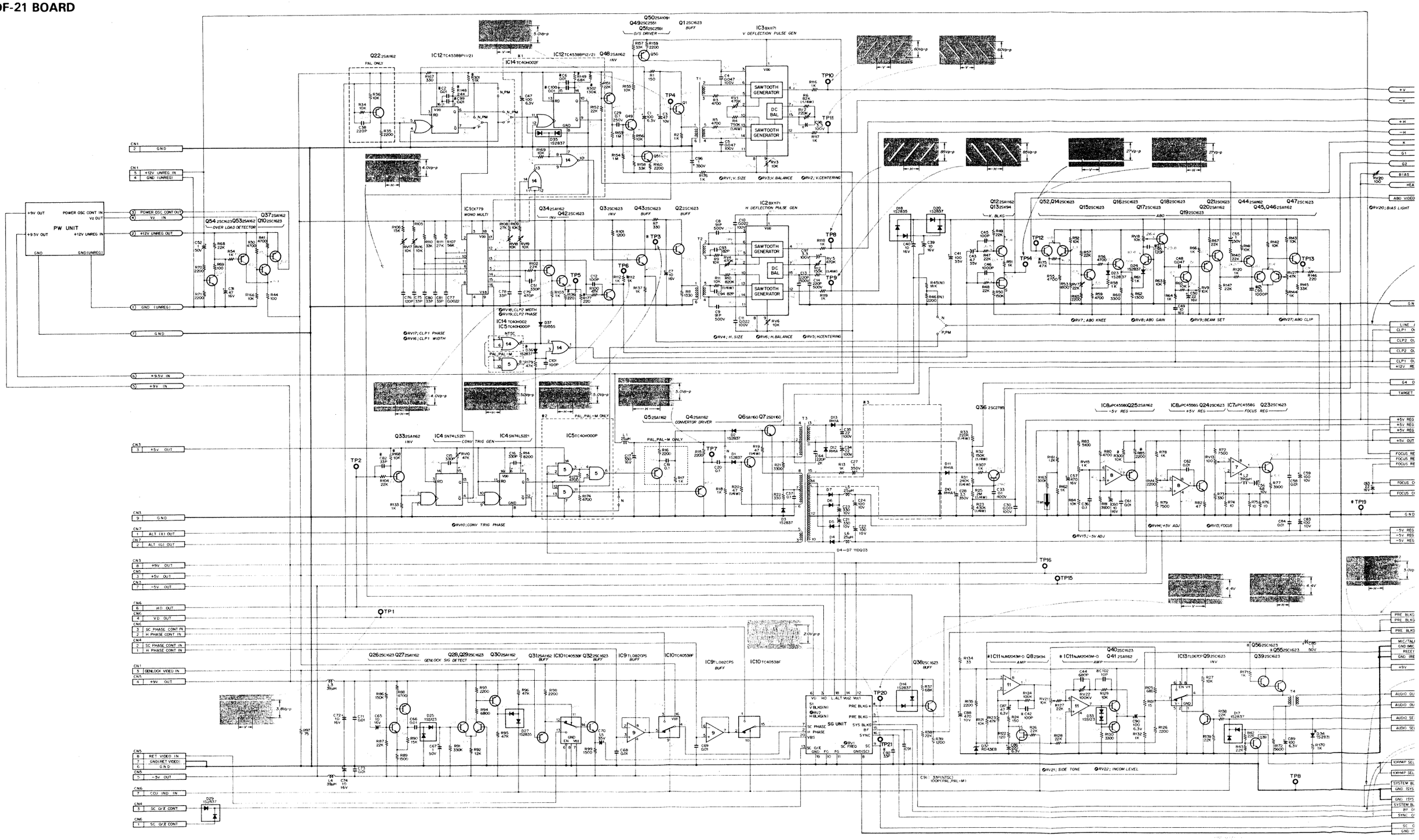
CN1	R-3	RV1	J-1
CN2	O-4	RV2	J-2
CN3	P-6	RV3	J-2
CN4	M-8	RV4	L-1
CN5	P-5	RV5	L-2
CN6	N-8	RV6	L-2
CN7	A-3	RV7	H-3
CN8	P-4	RV8	H-2
CN9	P-3	RV9	H-3
CN10	F-5	RV10	M-7
CN12	Q-6	RV13	N-3
CN13	P-7	RV14	F-6
CN14	Q-8	RV15	F-4
CN15	C-6	RV16	I-6
		RV17	H-6
D1	A-5	RV18	I-6
D2	A-5	RV19	I-7
D3	B-5	RV20	J-4
D4	D-5	RV21	O-7
D5	D-5	RV22	O-7
D6	D-5	RV27	H-3
D7	D-5		
D10	D-3	T1	J-3
D11	D-4	T2	L-3
D12	E-4	T3	C-4
D13	F-4	T4	R-8
D14	L-5		
D17	P-7	TM1	L-4
D18	D-3		
D20	D-3	TP1	M-7
D23	G-3	TP2	N-7
D24	H-2	TP3	M-3
D25	O-4	TP4	K-3
D27	O-5	TP5	O-3
D29	M-7	TP6	O-7
D32	Q-5	TP7	F-6
D33	Q-6	TP8	M-3
D34	O-7	TP9	L-3
D35	M-6	TP10	J-2
D36	L-8	TP11	K-2
		TP12	G-4
IC1	I-5	TP13	K-3
IC2	L-2	TP14	L-3
IC3	J-2	TP15	G-5
IC4	L-8	TP16	G-6
IC5	H-7	TP18	O-7
IC7	N-2	TP19	N-4
IC8	H-5	TP20	N-7
IC9	M-5	TP21	M-7
IC10	N-5		
IC11	Q-7		
IC12	I-4		
IC13	R-6		
IC14	L-6		
Q1	J-3		
Q2	L-3		
Q3	L-5		
Q4	E-6		
Q5	D-6		
Q6	A-4		
Q7	A-5		
Q8	P-8		
Q9	R-7		
Q10	P-2		
Q12	H-4		
Q13	H-4		
Q14	G-3		
Q15	G-3		
Q16	G-3		
Q17	G-2		
Q18	H-2		
Q19	H-2		
Q20	H-2		
Q21	H-2		
Q22	J-5		
Q23	O-2		
Q24	G-5		
Q25	G-4		
Q26	R-4		
Q27	O-4		
Q28	O-4		
Q29	O-4		
Q30	P-4		
Q31	N-5		
Q32	O-5		
Q33	K-7		
Q34	K-5		
Q36	F-3		
Q37	P-2		
Q38	L-5		
Q39	O-8		
Q40	Q-6		
Q41	Q-7		
Q42	K-5		
Q43	L-5		
Q44	I-2		
Q45	I-2		
Q46	I-3		
Q47	I-3		
Q48	I-3		
Q49	I-2		
Q50	I-1		
Q51	I-2		
Q52	G-4		
Q53	P-2		
Q54	P-2		
Q55	R-7		
Q56	R-7		

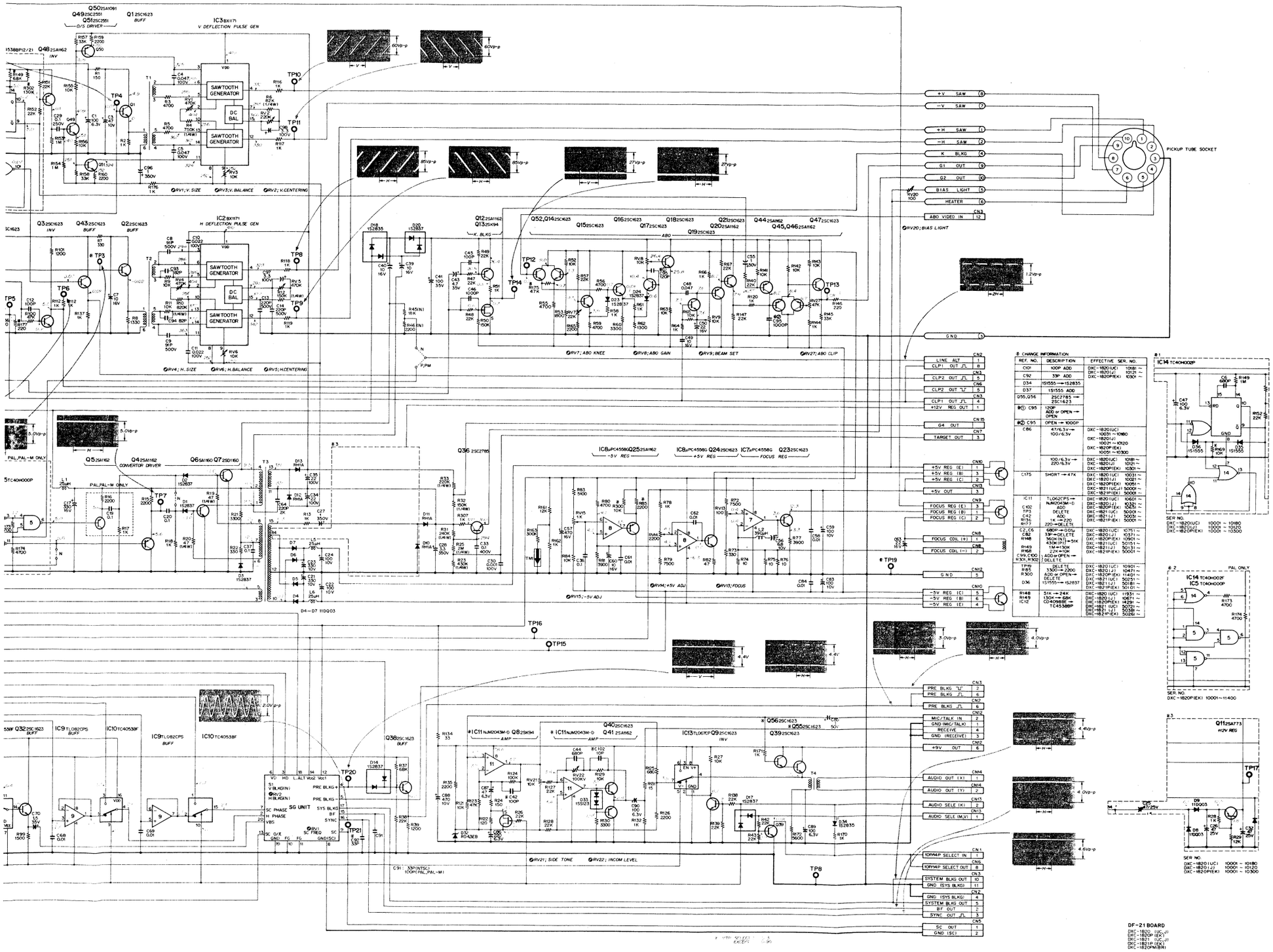
—SOLDERING SIDE—

DF-21 BOARD

1-681-212-13
DXC-1820 (UC) 10901~
DXC-1820 (J) 10471~
DXC-1820P (EX) 11401~
DXC-1821 (UC) 50251~
DXC-1821 (J) 50181~
DXC-1821P (EX) 50101~
DXC-1820MBR1 10001~

DF-21 BOARD


PW UNIT
POWER OSC CONT IN
Vz OUT
+12V UNREG IN
GND(UNREG)
+9V OUT
+9.5V OUT
GND (UNREG)
+12V UNREG IN
GND (UNREG)
POWER OSC CONT OUT
Vz IN
+12V UNREG OUT
OVER LOAD DETECTOR
IC1 CX779 MONO MULTI
IC2 BX1171 H DEFLECTION PULSE GEN
IC3 BX1171 V DEFLECTION PULSE GEN
SAWTOOTH GENERATOR
DC BAL
IC4 SN74LS221 CONV TRIG GEN
IC5 TC40H000P
IC7 μPC4558G FOCUS REG
IC8 μPC4558G +5V REG
IC8 μPC4558G -5V REG
IC9 TL082CPS BUFF
IC10 TC40S38F BUFF
IC11 NJM2043M-D AMP
IC12 TC4538BP(1/2)
IC13 TL061CP INV
IC14 TC40H002F
GENLOCK SIG DETECT
SC SYSTEM
SYNC
PRE BLKG
SYS BLKG
BF
SC FREQ
SC DET
GND(SC)
CONVERTOR DRIVER
O/S DRIVER
BUFF
INV
PAL ONLY
PAL,PAL-M ONLY
NTSC
PAL,PAL-M
CN1 GND
CN1 +12V UNREG IN
CN1 GND (UNREG)
CN3 +5V OUT
CN3 GND
CN7 ALT (X) OUT
CN7 ALT (G) OUT
CN3 +9V OUT
CN5 +5V OUT
CN3 -5V OUT
CN6 HD OUT
CN6 VD OUT
CN6 SC PHASE CONT IN
CN6 H PHASE CONT IN
CN4 SC PHASE CONT IN
CN4 H PHASE CONT IN
CN1 GENLOCK VIDEO IN
CN5 +9V OUT
CN5 RET VIDEO IN
CN5 GND(RET VIDEO)
CN5 G N D
CN5 -5V OUT
CN6 CCU IND IN
CN4 SC G/K CONT
CN6 SC G/K CONT
+V
-V
+H
-H
K
G1
G2
BIAS
HEA
ABO VIDEO
RV20;BIAS LIGHT
G N
LINE
CLP1
CLP2
CLP2
CLP1
+12V
G4
TARGET
+5V REG
+5V REG
+5V REG
+5V OUT
FOCUS RE
FOCUS RE
FOCUS RE
FOCUS D
FOCUS D
G N D
-5V REG
-5V REG
-5V REG
PRE BLKG
PRE BLKG
PRE BLKG
MIC/TAL
GND (MIC
RECEI
GND (RE
+9V
AUDIO OU
AUDIO OU
AUDIO SE
AUDIO SE
KRMAP SEL
KRMAP SEL
SYSTEM BL
GND (SYS
GND (SYS
SYSTEM BL
BF
SYNC
SC
GND (S
RV0;CONV TRIG PHASE
RV1;V. SIZE
RV2;V.CENTERING
RV3;V. BALANCE
RV4;H. SIZE
RV5;H.CENTERING
RV6;H.BALANCE
RV7;ABO KNEE
RV8;ABO GAIN
RV9;BEAM SET
RV10;CLP1 PHASE
RV11;CLP1 WIDTH
RV12;CLP2 WIDTH
RV13;CLP2 PHASE
RV14;+5V ADJ
RV15;-5V ADJ
RV16;FOCUS
RV17;SIDE TONE
RV18;INCOM LEVEL
RV27;ABO CLIP
D4~D7 1TDQ03
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP19
TP20
TP21



※ CHANGE INFORMATION		
REF. NO.	DESCRIPTION	EFFECTIVE SER. NO.
C101	100P ADD	DXC-1820(UC) 10181 ~ DXC-1820(J) 10121 ~
C92	33P ADD	DXC-1820P(EK) 10301 ~
D34	151555 → 152835	
D37	151555 ADD	
Q55,Q56	2SC2785 → 2SC1623	
※① C95	120P ADD or OPEN → OPEN	
※② C95	OPEN → 1000P	
C86	47/6.3V → 100/6.3V	DXC-1820(UC) 10181 ~ DXC-1820(J) 10121 ~ DXC-1820P(EK) 10301 ~
	100/6.3V → 220/6.3V	DXC-1820(UC) 10181 ~ DXC-1820(J) 10121 ~ DXC-1820P(EK) 10301 ~
C175	SHORT → 47K	DXC-1820(UC) 10031 ~ DXC-1820(J) 10021 ~ DXC-1820P(EK) 10051 ~ DXC-1821(UC,J) 50001 ~ DXC-1821P(EK) 50001 ~
IC11 C102 TP3 C42 R134 R177	TL082CPS → NJM2043M-D ADD DELETE ADD 1K → 220 220 → DELETE	DXC-1820(UC) 10601 ~ DXC-1820(J) 10321 ~ DXC-1820P(EK) 10451 ~ DXC-1821(UC) 50301 ~ DXC-1821(J) 50031 ~ DXC-1821P(EK) 50001 ~
C2,C6 C82 R148 R149 R162 C99,C100 R101,R102 TP16 R85 R300 D36	680P → 0.01μ 33P → DELETE 560K(IN1) → 51K 430K(IP1) → 1M → 510K ADD or OPEN → DELETE DELETE 1300 → 2200 ADD or OPEN → DELETE 151555 → 152837	DXC-1820(UC) 10751 ~ DXC-1820(J) 10371 ~ DXC-1820P(EK) 10901 ~ DXC-1821(UC) 50151 ~ DXC-1821(J) 50131 ~ DXC-1821P(EK) 50101 ~
R148 R149 IC12	51K → 24K 130K → 68K CD4098BE → TC4538BP	DXC-1820(UC) 11931 ~ DXC-1820(J) 10671 ~ DXC-1820P(EK) 11291 ~ DXC-1821(UC) 50251 ~ DXC-1821(J) 50231 ~ DXC-1821P(EK) 50201 ~

#1
IC14 TC4040002P

#2
PAL ONLY
IC14 TC4040002P
IC5 TC4040002P

SER NO.
DXC-1820P(EK) 10001~11400

SER NO.
DXC-1820(UC) 10001 ~ 10180
DXC-1820(J) 10001 ~ 10120
DXC-1820P(EK) 10001 ~ 10300

NOTE:

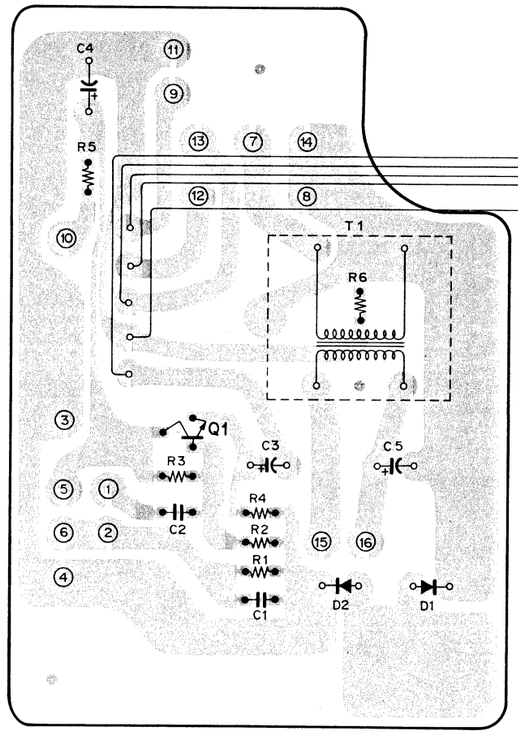
1. All voltages are dc, measured with a digital voltmeter (input resistance 10MΩ).
2. All waveforms are taken in condition below.
   - Set the filter knob to 1 position.
   - Shoot the color-bar pattern on the pattern box(AUTO). Adjust the lens iris so that the white level at TP1/PR-46 board is 250mv.

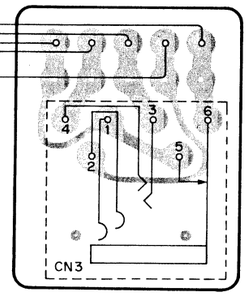
注意

1. DC電圧はデジタル電圧計(入力抵抗10MΩ)による値。
2. 波形写真は下記条件で撮影。
   - フィルター：1
   - カラーバーパターンチャート(パターンボックス：AUTO)を撮影し、レンズ絞りにてTP1/PR-46基板の1レベルを250mVにする。
   - カメラGAINスイッチ：0dB

AU-47, CT-45, JK-8

AU-47 BOARD
CT-45 BOARD
JK-8 BOARD





—SOLDERING SIDE—

JK-8 BOARD

1-611-217-11

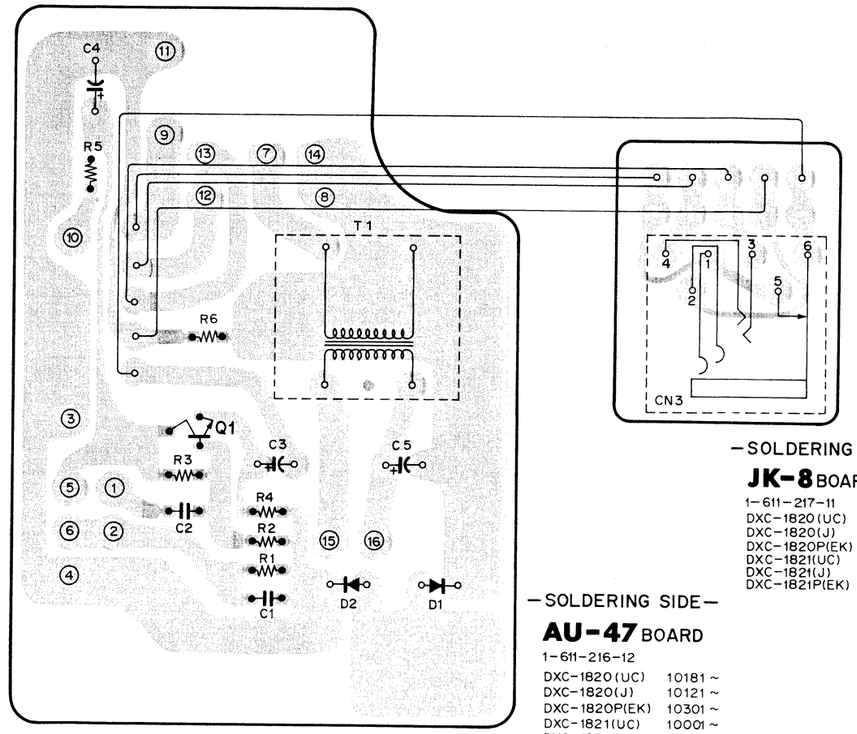
DXC-1820(UC)	10001 ~
DXC-1820(J)	10001 ~
DXC-1820P(EK)	10001 ~
DXC-1821(UC)	
DXC-1821(J)	
DXC-1821P(EK)	

—SOLDERING SIDE—

AU-47 BOARD

1-611-216-11

DXC-1820(UC)	10001 ~ 10180
DXC-1820(J)	10001 ~ 10120
DXC-1820P(EK)	10001 ~ 10300



—SOLDERING SIDE—

JK-8 BOARD

1-611-217-11

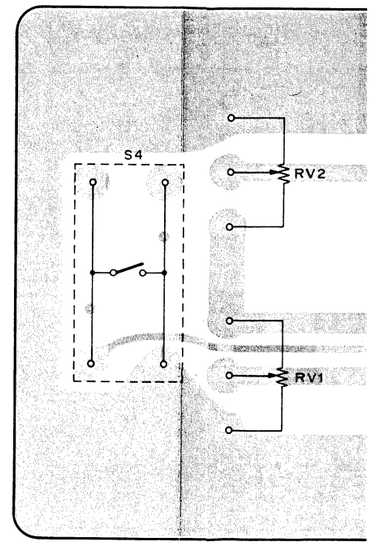
DXC-1820(UC)	10001 ~
DXC-1820(J)	10001 ~
DXC-1820P(EK)	10001 ~
DXC-1821(UC)	10001 ~
DXC-1821(J)	10001 ~
DXC-1821P(EK)	10001 ~

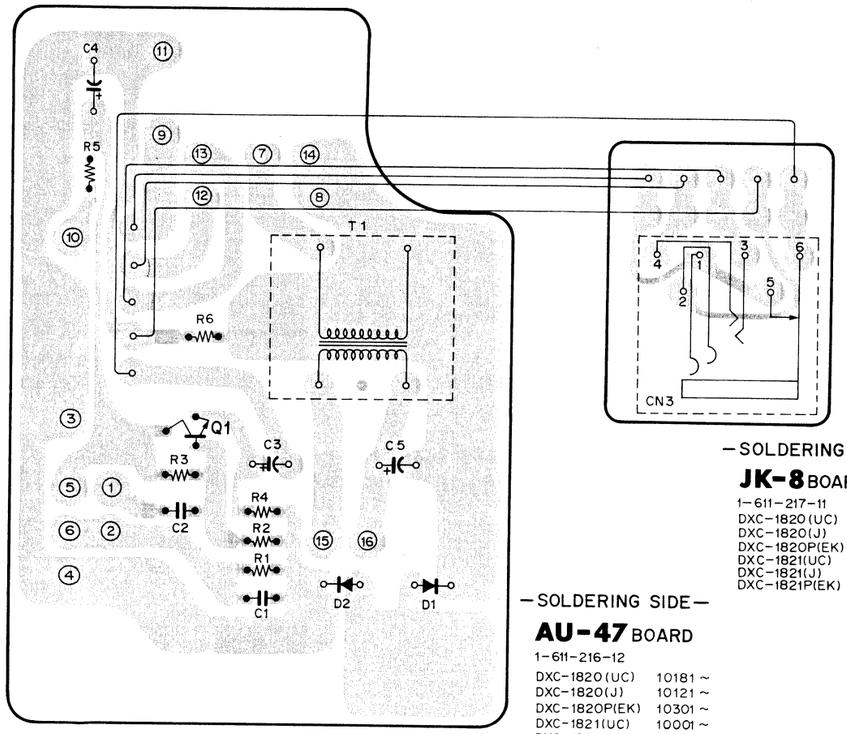
—SOLDERING SIDE—

AU-47 BOARD

1-611-216-12

DXC-1820(UC)	10181 ~
DXC-1820(J)	10121 ~
DXC-1820P(EK)	10301 ~
DXC-1821(UC)	10001 ~
DXC-1821(J)	10001 ~
DXC-1821P(EK)	10001 ~





—SOLDERING SIDE—

AU-47 BOARD

1-611-216-12

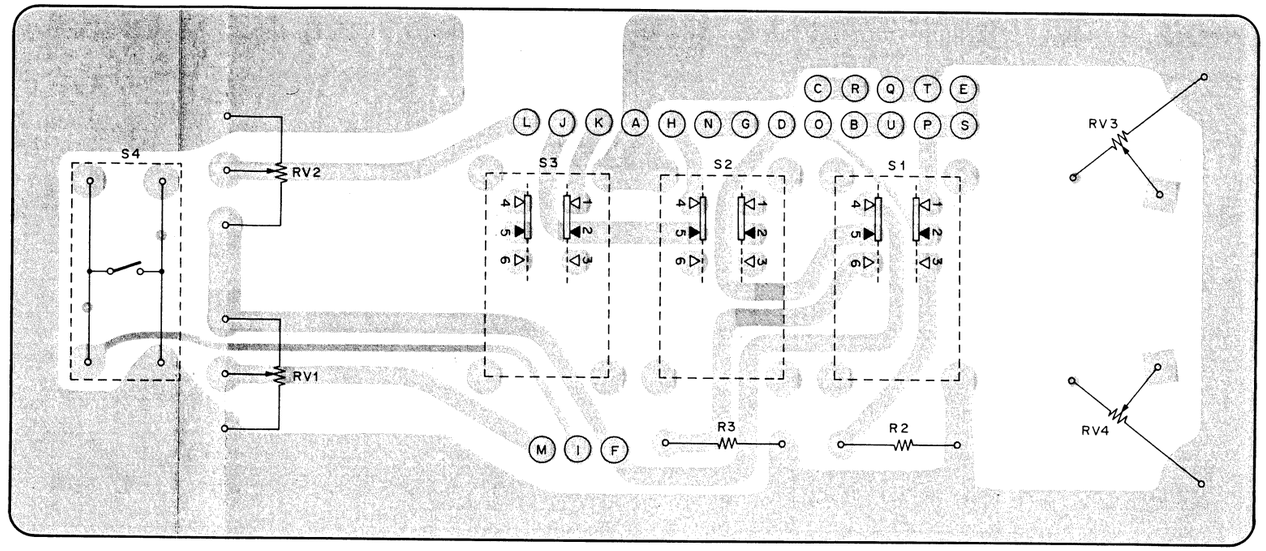
DXC-1820(UC)	10181 ~
DXC-1820(J)	10121 ~
DXC-1820P(EK)	10301 ~
DXC-1821(UC)	10001 ~
DXC-1821(J)	10001 ~
DXC-1821P(EK)	10001 ~

—SOLDERING SIDE—

JK-8 BOARD

1-611-217-11

DXC-1820(UC)	10001 ~
DXC-1820(J)	10001 ~
DXC-1820P(EK)	10001 ~
DXC-1821(UC)	10001 ~
DXC-1821(J)	10001 ~
DXC-1821P(EK)	10001 ~



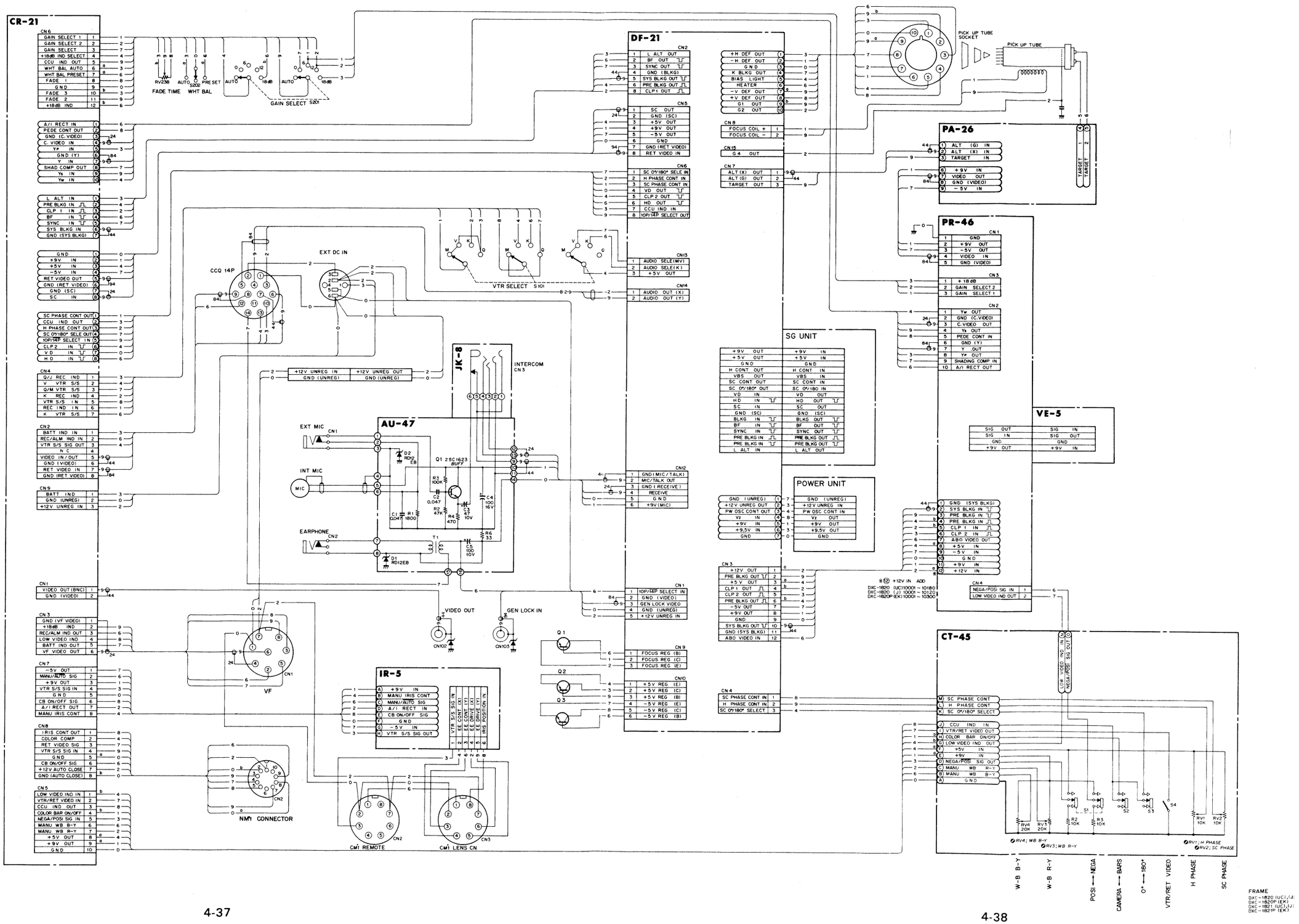
—SOLDERING SIDE—

CT-45 BOARD

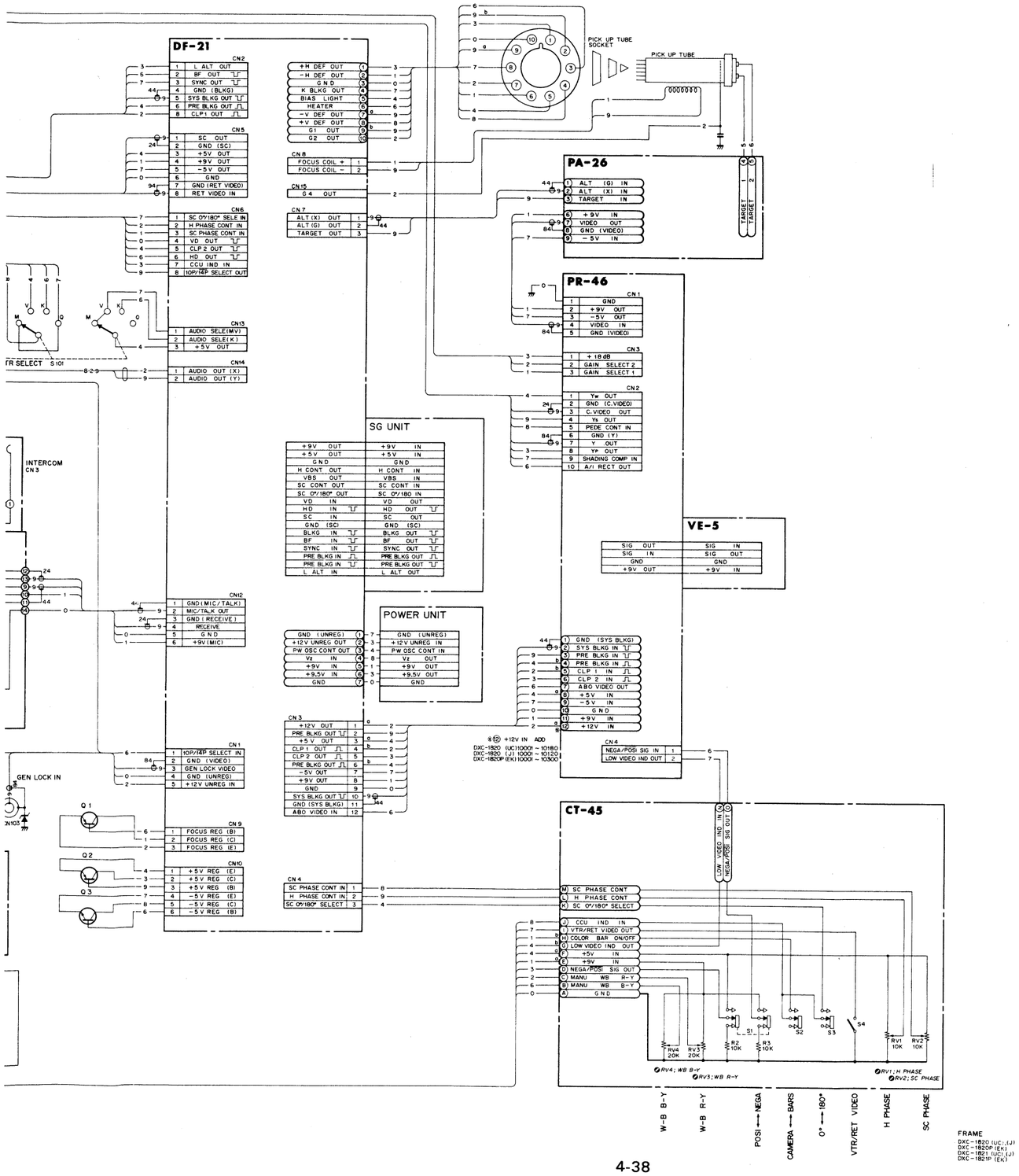
1-611-219-11,12

DXC-1820(UC)	10001 ~
DXC-1820(J)	10001 ~
DXC-1820P(EK)	10001 ~
DXC-1821(UC)	10001 ~
DXC-1821(J)	10001 ~
DXC-1821P(EK)	10001 ~

FRAME
AU-47 BOARD
CT-45 BOARD
JK-8 BOARD

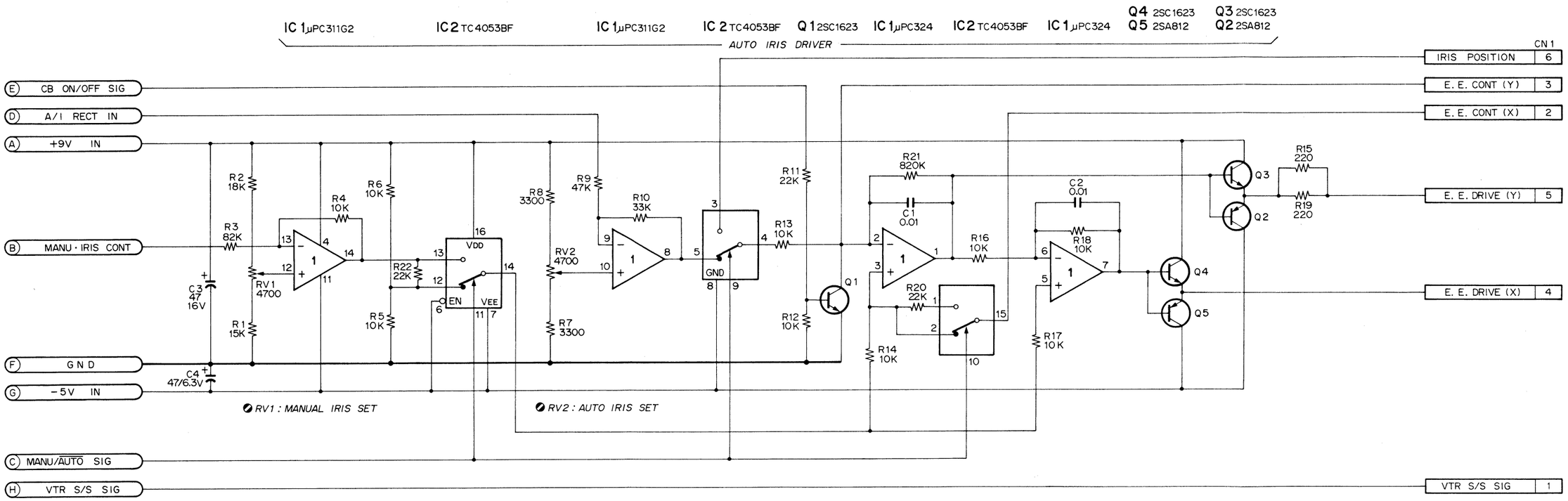


FRAME
DXC-1820 (UC),(J)
DXC-1820P (EK)
DXC-1821 (UC),(J)
DXC-1821P (EK)



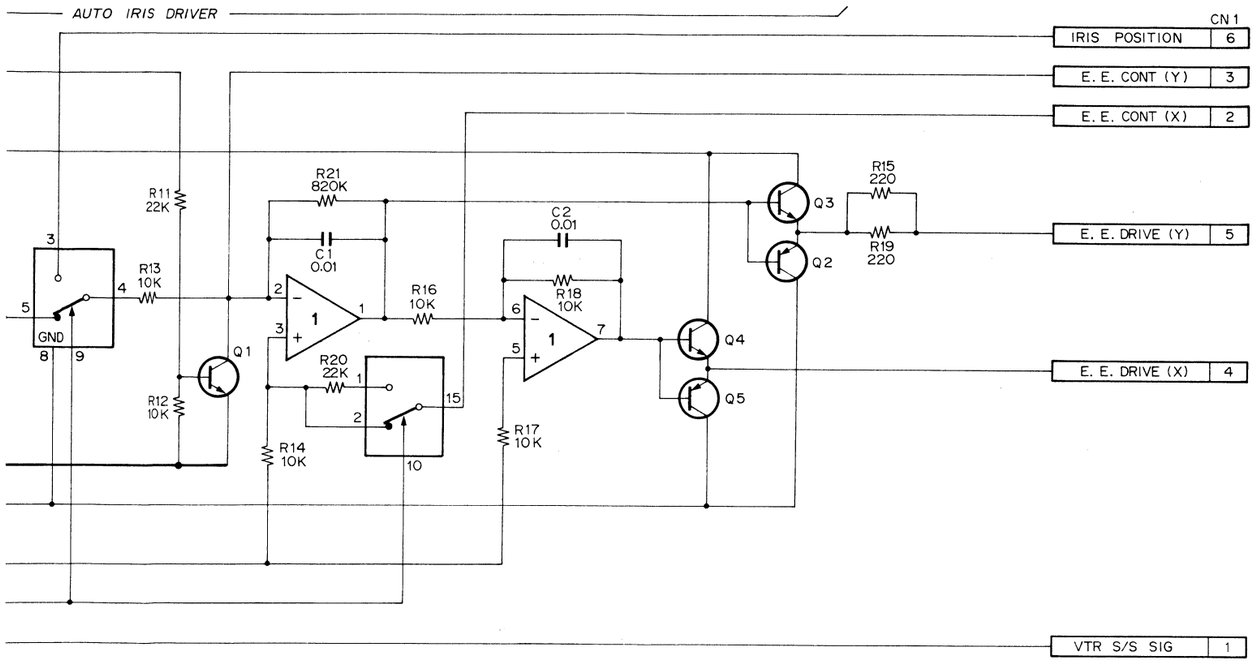
FRAME
DXC-1820 (UC), (J)
DXC-1820P (EX)
DXC-1821 (UC), (J)
DXC-1821P (EX)

IR-5 BOARD (DXC-1820/1821P)
LENS CONTROL

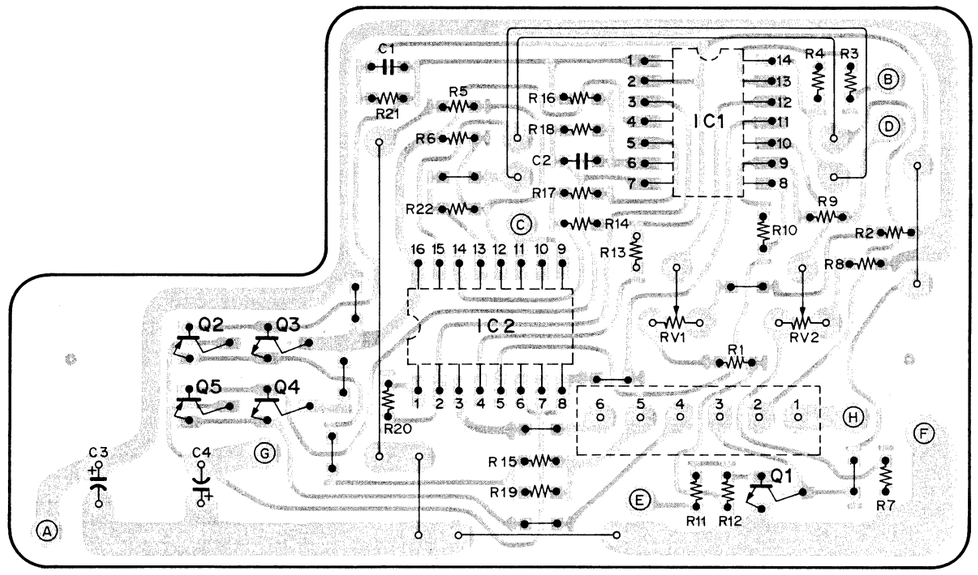


IR-5 BOARD
DXC-1821 (UC),(J)
DXC-1821P (EK)

IC 2 TC4053BF Q 1 2SC1623 IC 1 µPC324 IC 2 TC4053BF IC 1 µPC324 Q4 2SC1623 Q5 2SA812 Q3 2SC1623 Q2 2SA812



IR-5 BOARD
DXC-1821 (UC),(J)
DXC-1821P (EK)

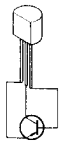


—SOLDERING SIDE—

IR-5 BOARD
1-610-413-12
DXC-1821(UC) 10001 ~
DXC-1821(J) 10001 ~
DXC-1821P(EK) 10001 ~

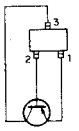
SECTION 5
SEMICONDUCTOR ELECTRODES

第5章
半導体

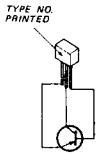


2SA1091

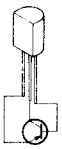
TOP VIEW



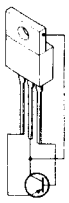
2SA1162
2SA1226
2SA812



2SA1175

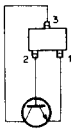


2SA773

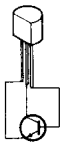


2SB856

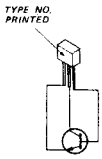
TOP VIEW



2SC1009A
2SC1623

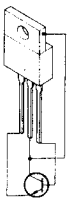


2SC1364
2SC2551

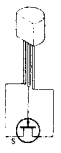


2SC2785

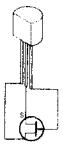
2SD1160



2SD313HP

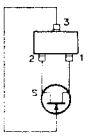


2SK125



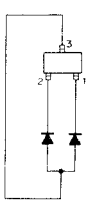
2SK152

TOP VIEW



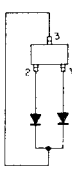
2SK94

TOP VIEW



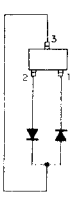
1S2835

TOP VIEW



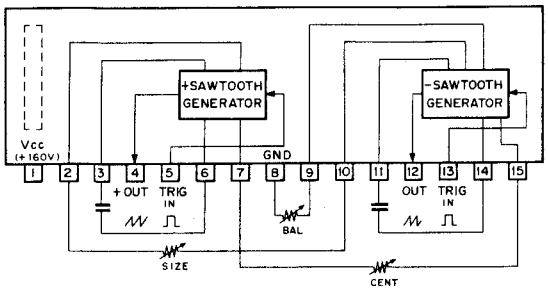
1S2837

TOP VIEW

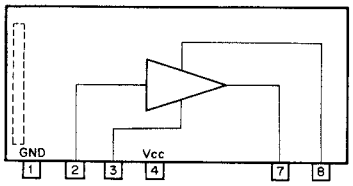


1SS123

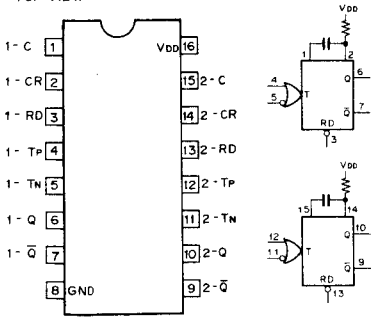
BX1171 (SONY)
SAWTOOTH GENERATOR
— REAR VIEW —



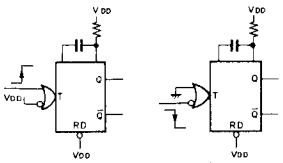
BX333A (SONY)
VIDEO AMPLIFIER
—REAR VIEW—



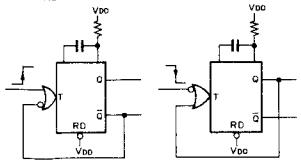
CD4098BE (RCA)
TC4538BP (TOSHIBA)
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
-TOP VIEW-



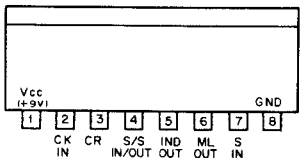
RETRIGGERABLE M.M.V

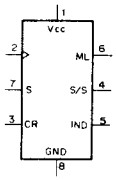


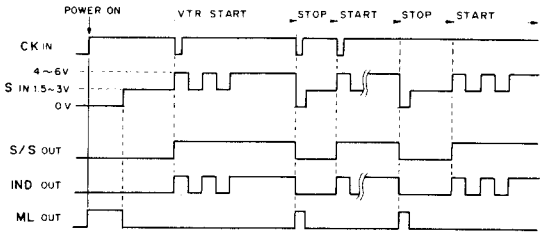
NON-RETRIGGERABLE M.M.V

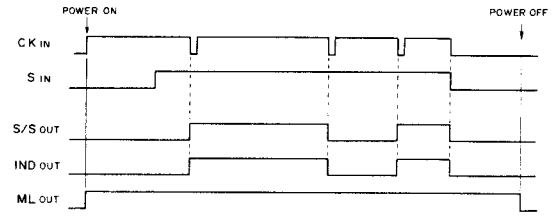


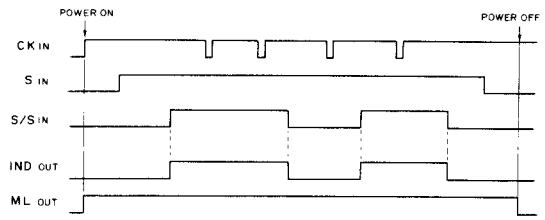
CX518 (SONY)
INTERFACE CIRCUIT BETWEEN VTR AND CAMERA
— SIDE VIEW —





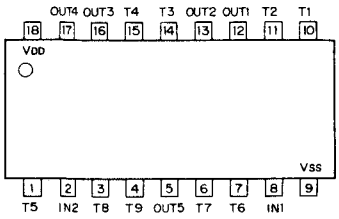


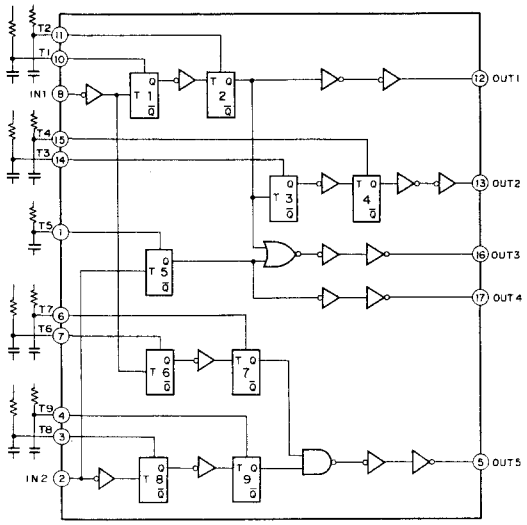




CX 779 (SONY)

– TOP VIEW –

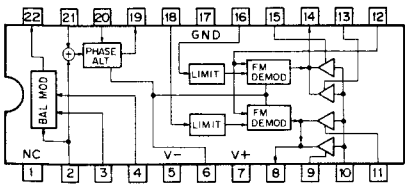




1 ~ 9 : MONOSTABLE MULTIVIBRATOR

CX811 (SONY)

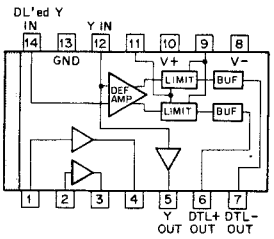
– TOP VIEW –



CX815 (SONY)

DTL AMPLIFIER

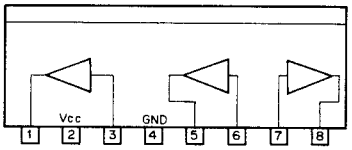
– TOP VIEW –



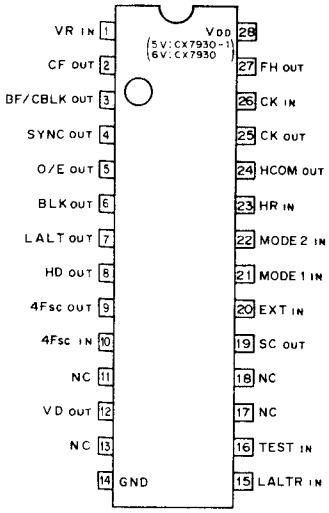
CX816 (SONY)

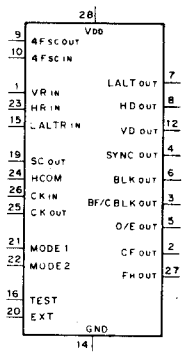
1H DELAY LINE DRIVER, CHROMA / INDEX AMPLIFIER

– SIDE VIEW –



CX7930 (SONY) FLAT PACKAGE
CX7930-1 (SONY) FLAT PACKAGE
C-MOS SYNC GENERATOR (NTSC, PAL-M, PAL, SECAM)
— TOP VIEW —





O/E : ODD/EVEN FIELD
CF : COLOR FRAME PULSE
HCOM : H COMPARATOR

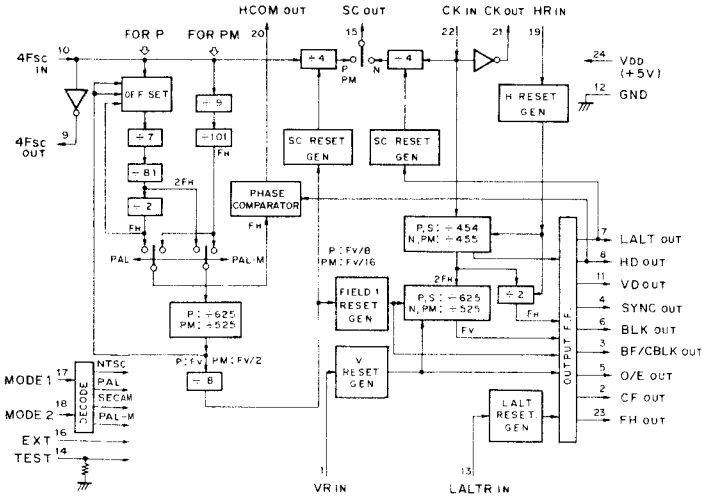
SYSTEM	4Fsc	CLOCK
NTSC	910 FH	910FH
PAL	1135FH+2FV	908FH
PALM	909FH	910FH
SECAM	———	908FH

INPUTS		SYSTEM
MODE 1	MODE 2	
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

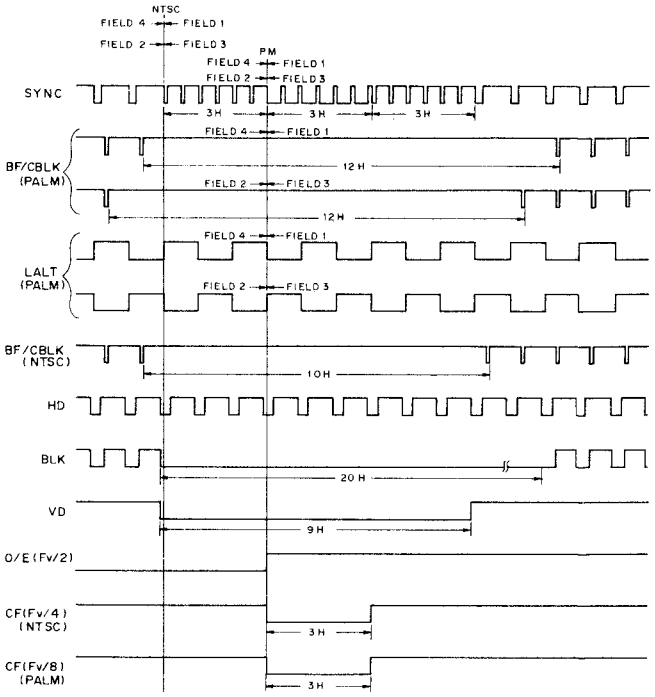
INPUTS		FUNCTION
EXT	TEST	
0	0	INTERNAL
0	1	INVALID
1	0	EXT
1	1	TEST

0 ; LOW LEVEL (GND)
1 ; HIGH LEVEL (VDD)

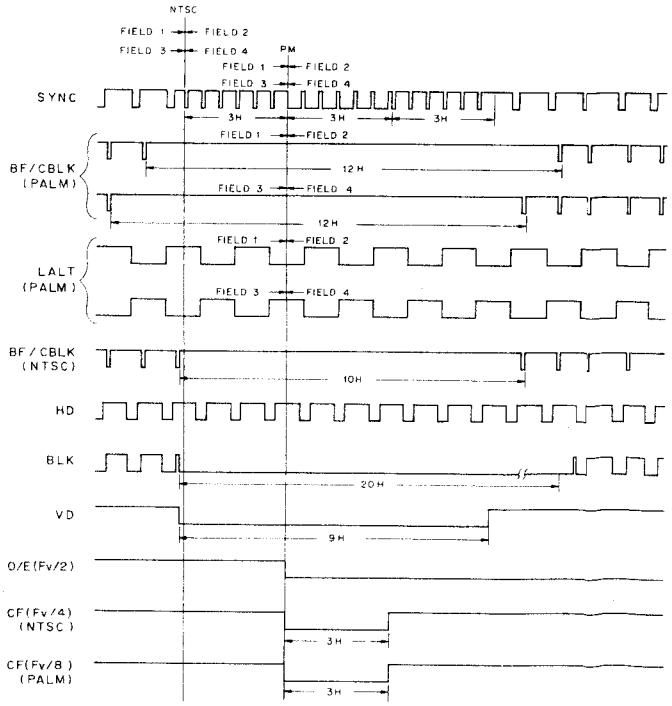
TEST "0" OPEN (INTERNALLY PULLED DOWN)

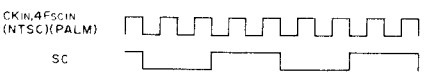


NTSC, PAL-M (FIELD 1,3)

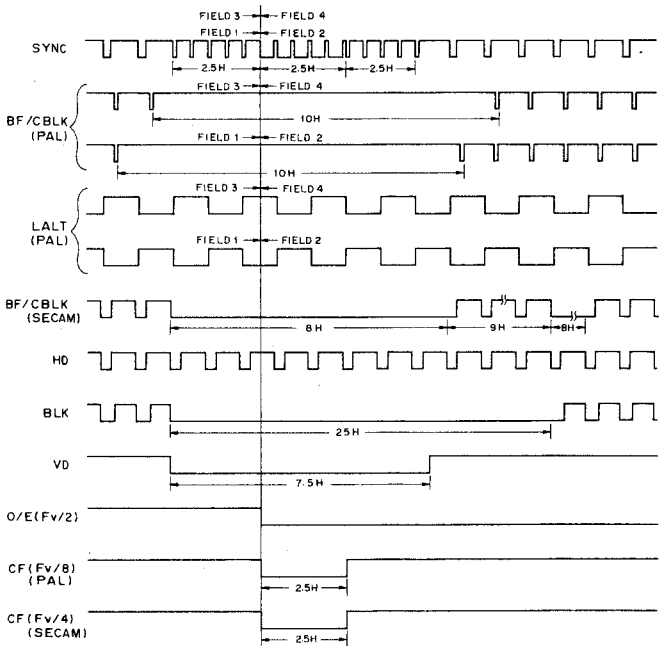


NTSC, PAL-M (FIELD 2, 4)

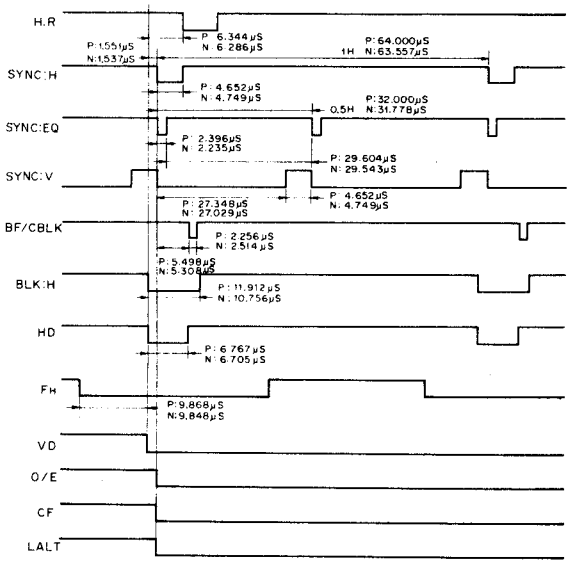




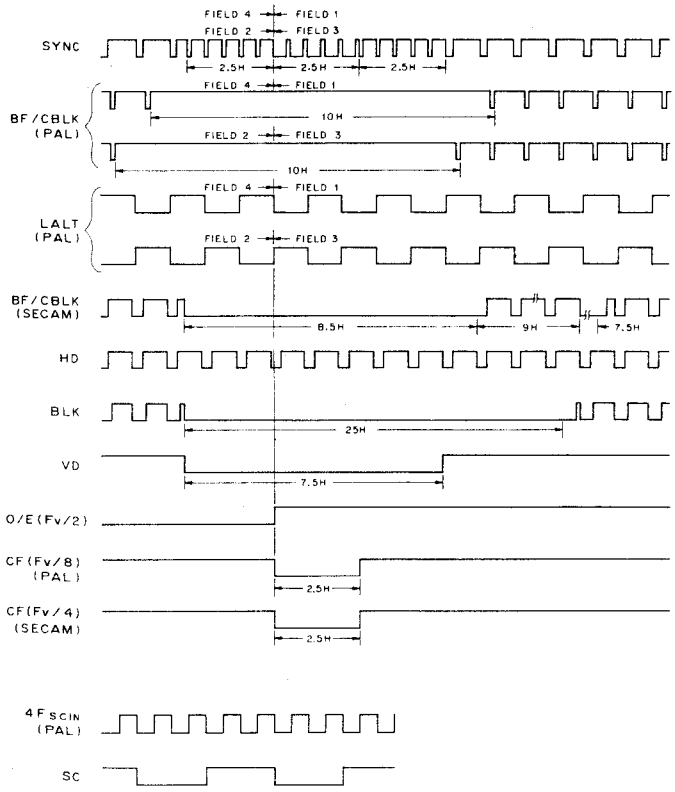
PAL, SECAM (FIELD 4, 2)



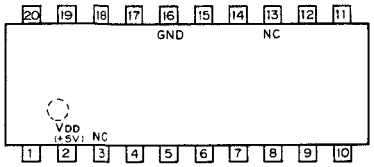
P: PAL, SECAM
N: NTSC, PALM



PAL, SECAM (FIELD 1, 3)

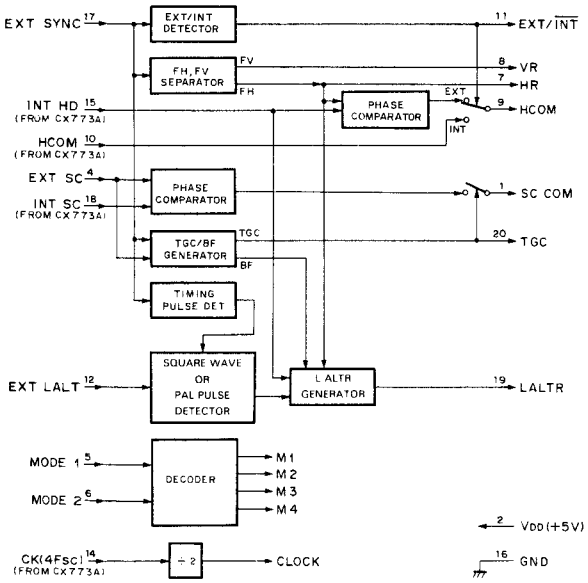


CX7998 (SONY) FLAT PACKAGE
C-MOS GENLOCK DRIVER FOR CX773A
— TOP VIEW —

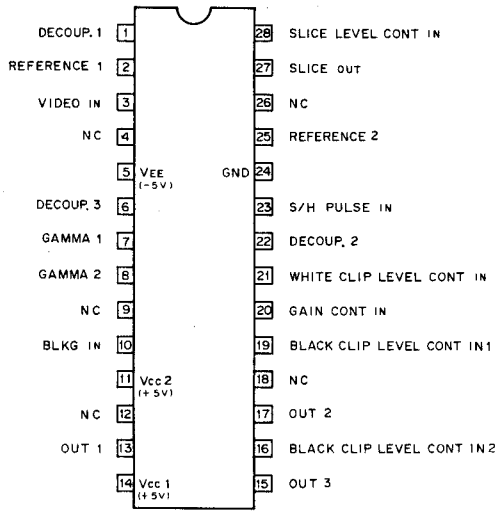


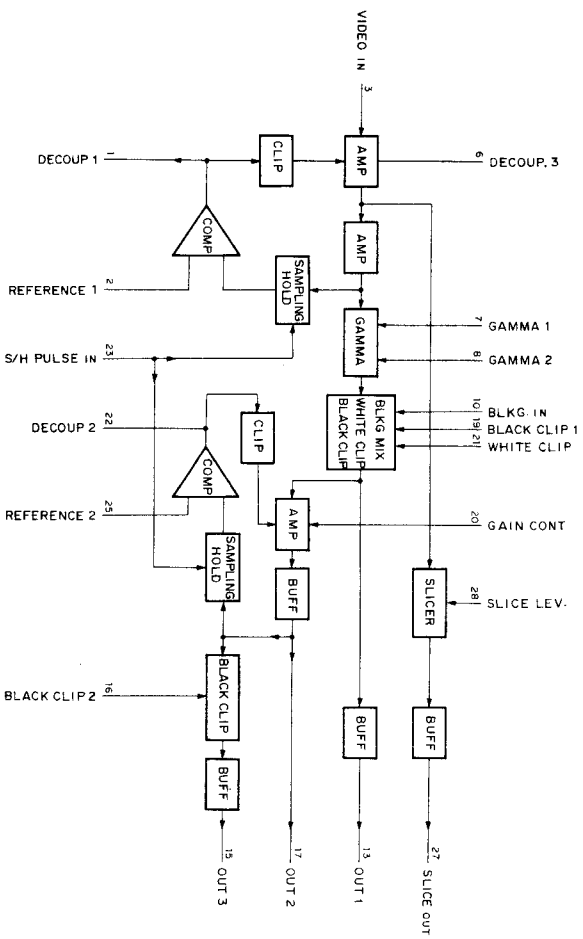
INPUTS		EXT LOCK MODE	
MODE 1	MODE 2		
0	0	M 1	PAL:VBS
1	0	M 2	PAL-M:VBS
0	1	M 3	PAL:VS/SC/LALT
			SECAM:VS/SC/LALT
1	1	M 4	NTSC:VBS
			NTSC:VS/SC
			PAL-M:VS/SC/LALT

0 ; LOW LEVEL
1 ; HIGH LEVEL

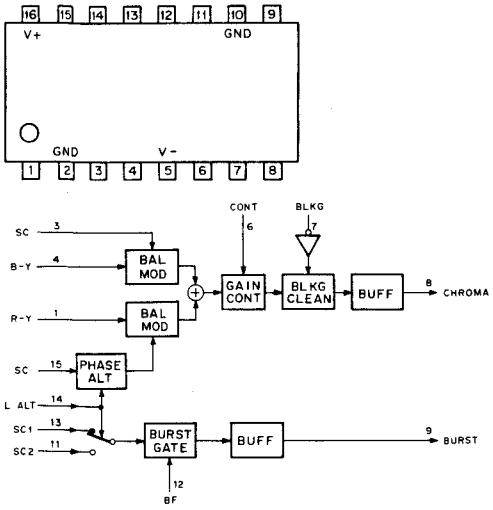


CX22014 (SONY)
VIDEO SIGNAL PROCESSOR
— TOP VIEW —

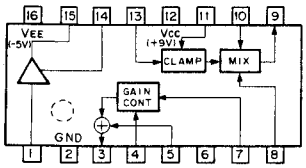




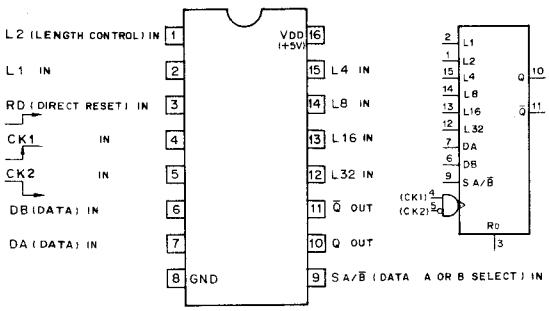
CX22017 (SONY)
VIDEO SIGNAL PROCESSOR
— TOP VIEW —



CX20064 (SONY) FLAT PACKAGE
VIDEO SIGNAL PROCESSOR
— TOP VIEW —



HD14557BFP (HITACHI) FLAT PACKAGE
C-MOS 1-TO-64-BIT VARIABLE LENGTH SHIFT REGISTER
— TOP VIEW —



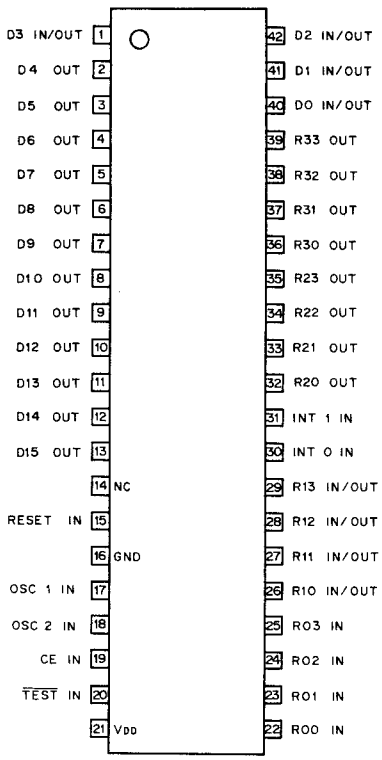
LENGTH SELECT TRUTH TABLE

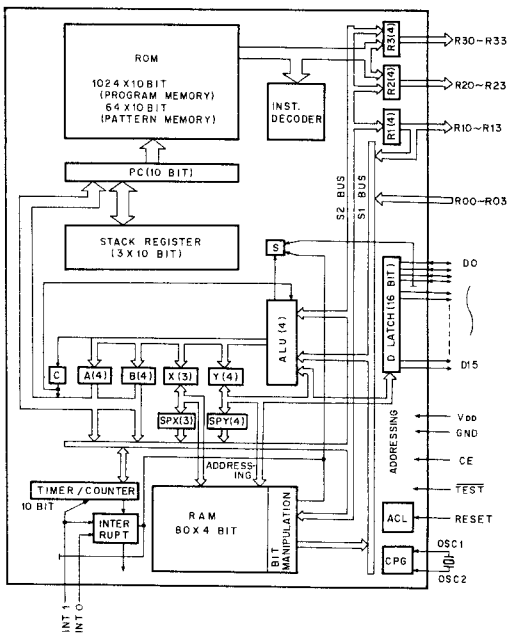
L32	L16	L8	L4	L2	L1	REGISTER LENGTH
0	0	0	0	0	0	1 - BIT
0	0	0	0	0	1	2 - BIT
0	0	0	0	1	0	3 - BIT
0	0	0	0	1	1	4 - BIT
0	0	0	1	0	0	5 - BIT
⋮	⋮	⋮	⋮	⋮	⋮	⋮
1	1	1	1	0	0	61 - BIT
1	1	1	1	0	1	62 - BIT
1	1	1	1	1	0	63 - BIT
1	1	1	1	1	1	64 - BIT

INPUTS				OUTPUT
RD	SA/B̄	CK1	CK2	Q
0	0	↓	0	DB
0	1	↓	0	DA
0	0	1	↓	DB
0	1	1	↓	DA
1	X	X	X	0

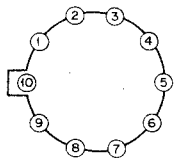
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

HD44750A-28 (HITACHI)
(HMCS43C)
C-MOS 4-BIT MICROPROCESSOR
—TOP VIEW—

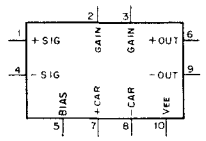




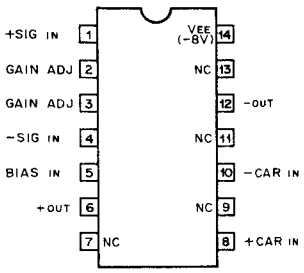
MC1496G (MOTOROLA)
DOUBLE-BALANCED MOD/DEMOD.
— BOTTOM VIEW —

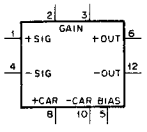


1 +SIGNAL INPUT
2 GAIN ADJUST
3 GAIN ADJUST
4 −SIGNAL INPUT
5 BIAS
6 +OUTPUT
7 +CARRIER INPUT
8 −CARRIER INPUT
9 −OUTPUT
10 VEE

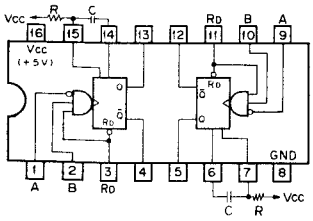


MC1496P (MOTOROLA)
uA796PC (FSC)
BALANCED MODULATOR/DEMODULATOR
— TOP VIEW —





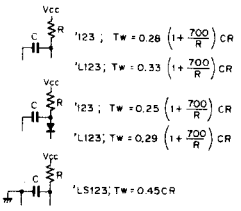
SN74LS123NS (TI) FLAT PACKAGE
TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET
— TOP VIEW —



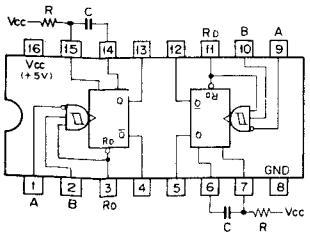
INPUTS			OUTPUTS	
RD	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
↑	0	1	⊓	⊔

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH



SN74LS221N (TI)
SN74LS221NS (TI) FLAT PACKAGE
TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT
— TOP VIEW —

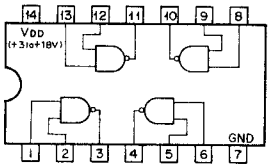


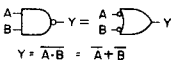
INPUTS			OUTPUTS	
RD	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
↑	0	1	⊓	⊔

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

TC4011BF (TOSHIBA) FLAT PACKAGE
C-MOS 2-INPUT NAND GATE
— TOP VIEW —

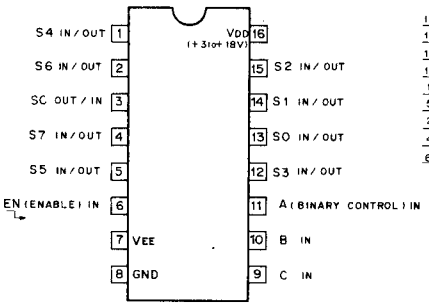


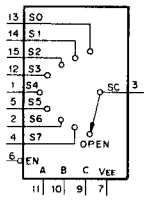


A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

TC4051BF (TOSHIBA) FLAT PACKAGE
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —

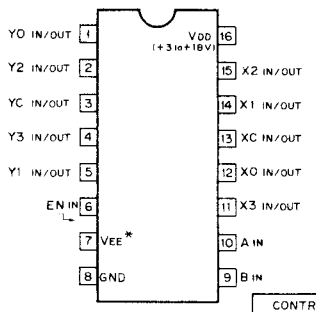


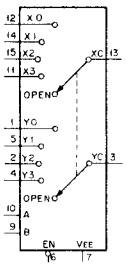


EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC4052BF (TOSHIBA) FLAT PACKAGE
C-MOS 4-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



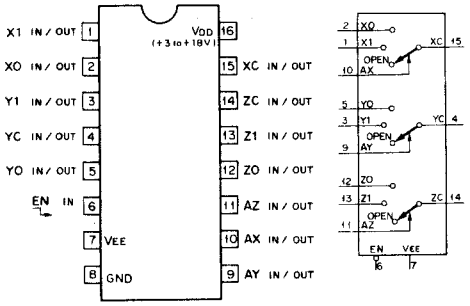


VEE*; VDD − VEE = +3 to +16V

CONTROL INPUTS			"ON" CHANNEL
EN	B	A	
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	OPEN

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

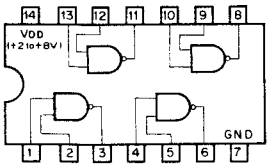
TC4053BF (TOSHIBA) FLAT PACKAGE
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —

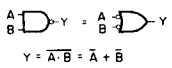

X1 IN / OUT 1
XO IN / OUT 2
Y1 IN / OUT 3
YC IN / OUT 4
YO IN / OUT 5
EN IN 6
7 VEE
8 GND
VDD (+3 to +18V) 16
15 XC IN / OUT
14 ZC IN / OUT
13 Z1 IN / OUT
12 ZO IN / OUT
11 AZ IN / OUT
10 AX IN / OUT
9 AY IN / OUT
OPEN
EN VEE

CONT. INPUTS		ON
EN	A (X,Y,Z)	CHANNEL
0	0	0
0	1	1
1	X	OPEN

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

TC40H000F (TOSHIBA) FLAT PACKAGE
TC40H000P (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —



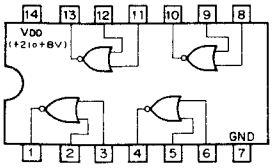


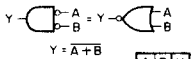
$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

TC40H002F (TOSHIBA) FLAT PACKAGE
TC40H002P (TOSHIBA)
C-MOS 2-INPUT NOR GATE
— TOP VIEW —



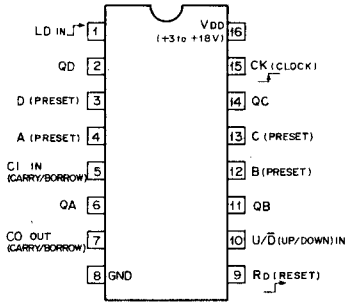


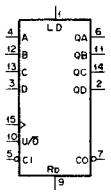
$Y = \overline{A + B}$

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0: LOW LEVEL
1: HIGH LEVEL

TC4516BF (TOSHIBA) FLAT PACKAGE
C-MOS PRESETTABLE BINARY UP/DOWN COUNTER
— TOP VIEW —





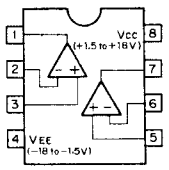
INPUTS					OUTPUTS			
CK	RD	LD	CI	U/D	QD	QC	QB	QA
X	1	X	X	X	0	0	0	0
X	0	1	X	X	SET TO A,B,C,D			
↓	0	0	0	1	COUNT UP			
↓	0	0	0	0	COUNT DOWN			
0	0	0	X	X	NO CHANGE			
X	0	0	1	X	NO CHANGE			

CO = L
CI = L & (DOWN · COUNT "0" OR UP · COUNT "15")

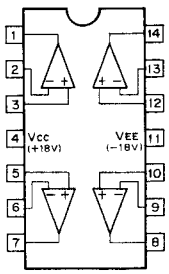
COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

COUNT UP — COUNT DOWN

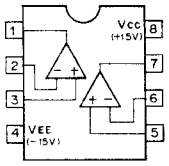
TL062CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(JFET INPUT)
— TOP VIEW —



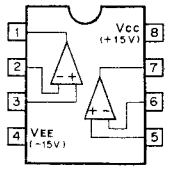
TL064CNS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



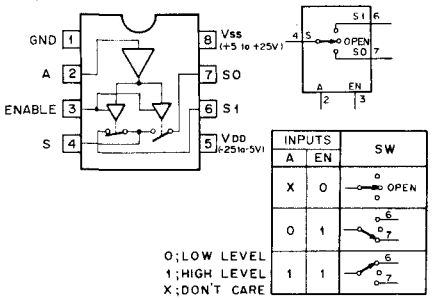
TL072CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(LOW-NOISE, JFET-INPUT)
— TOP VIEW —



TL082CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



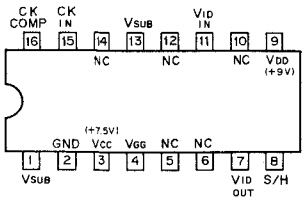
TL607CP (TI)
TL607CPS (TI) FLAT PACKAGE
P-MOS ANALOG SWITCH
— TOP VIEW —

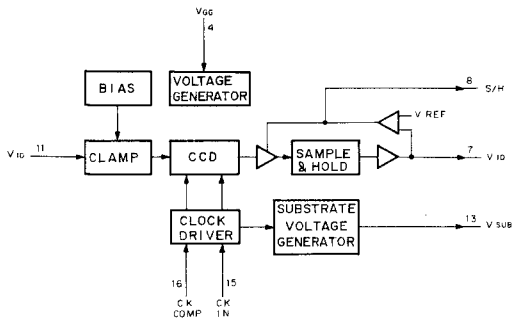


INPUTS A	INPUTS EN	SW
X	0	OPEN
0	1	6-7
1	1	6-7

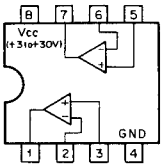
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TL8703P (TOSHIBA)
N-CH CCD DELAY LINE
— TOP VIEW —

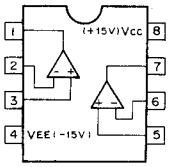




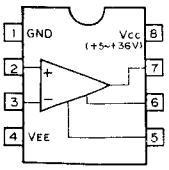
uPC358G2 (NEC) FLAT PACKAGE
DUAL OPERATIONAL AMPLIFIERS
— TOP VIEW —



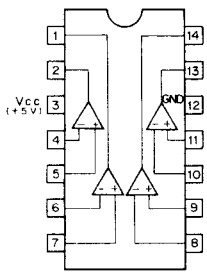
uPC4558G2 (NEC) FLAT PACKAGE
OPERATIONAL AMPLIFIER
— TOP VIEW —



uPC311G2 (NEC) FLAT PACKAGE
VOLTAGE COMPARATOR
— TOP VIEW —



uPC339G2 (NEC) FLAT PACKAGE
COMPARATOR
— TOP VIEW —



SECTION 6
SPARE PARTS

6-1. PARTS INFORMATION

1. **Safety Related Component Warning**

   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.

2. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to **"accommodating the improved parts and/or engineering changes"** or **"standardization of genuine parts."**
   - This manual's exploded views and electrical spare parts list are indicating the parts numbers of "the standardized genuine parts at present".
   - Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.

3. **Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

4. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

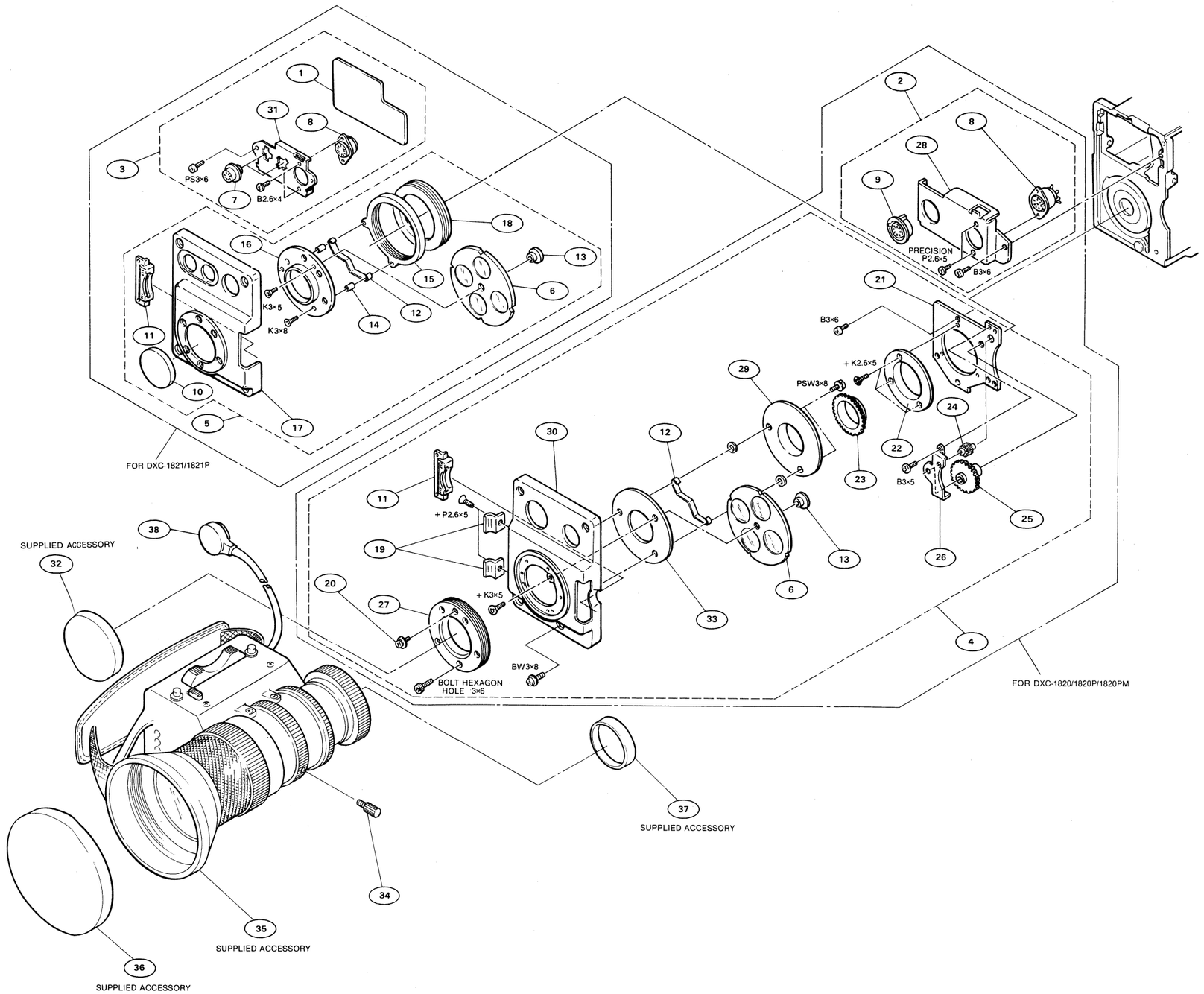
5. **Screw**

TOTSU TYPE	B	BTP	PS	PSW
2.6 × 3	7-621-912-08			
2.6 × 5			7-621-972-15	
2.6 × 6	7-621-912-30			
2.6 × 8			7-621-972-35	
3 × 5	7-686-623-04			
3 × 6	7-682-624-04			
3 × 8	7-682-625-04	7-687-614-29		7-686-528-01
4 × 6	7-686-634-09			
4 × 8	7-686-635-09			

PHILLIPS TYPE	+ B (CR-N)	+ B (BZN-N)	+ K	+ K (BZN-N)	+ P
2.6 × 4	7-621-775-10		7-621-559-22		
2.6 × 5			7-621-559-32		7-627-556-58
2.6 × 6	7-621-773-95				
2.6 × 8					7-621-259-55
3 × 4				7-682-245-09	
3 × 5		7-682-623-04	7-682-246-13	7-682-246-09	
3 × 6		7-682-547-09	7-682-247-04		
3 × 8	7-682-548-04	7-682-548-09	7-682-248-04	7-682-248-09	
4 × 8			7-682-261-09		

	PS	PSW
3 × 6	7-682-947-01	7-682-947-01
3 × 8		7-682-948-01

EXPLODED VIEW
FRONT PANEL BLOCK



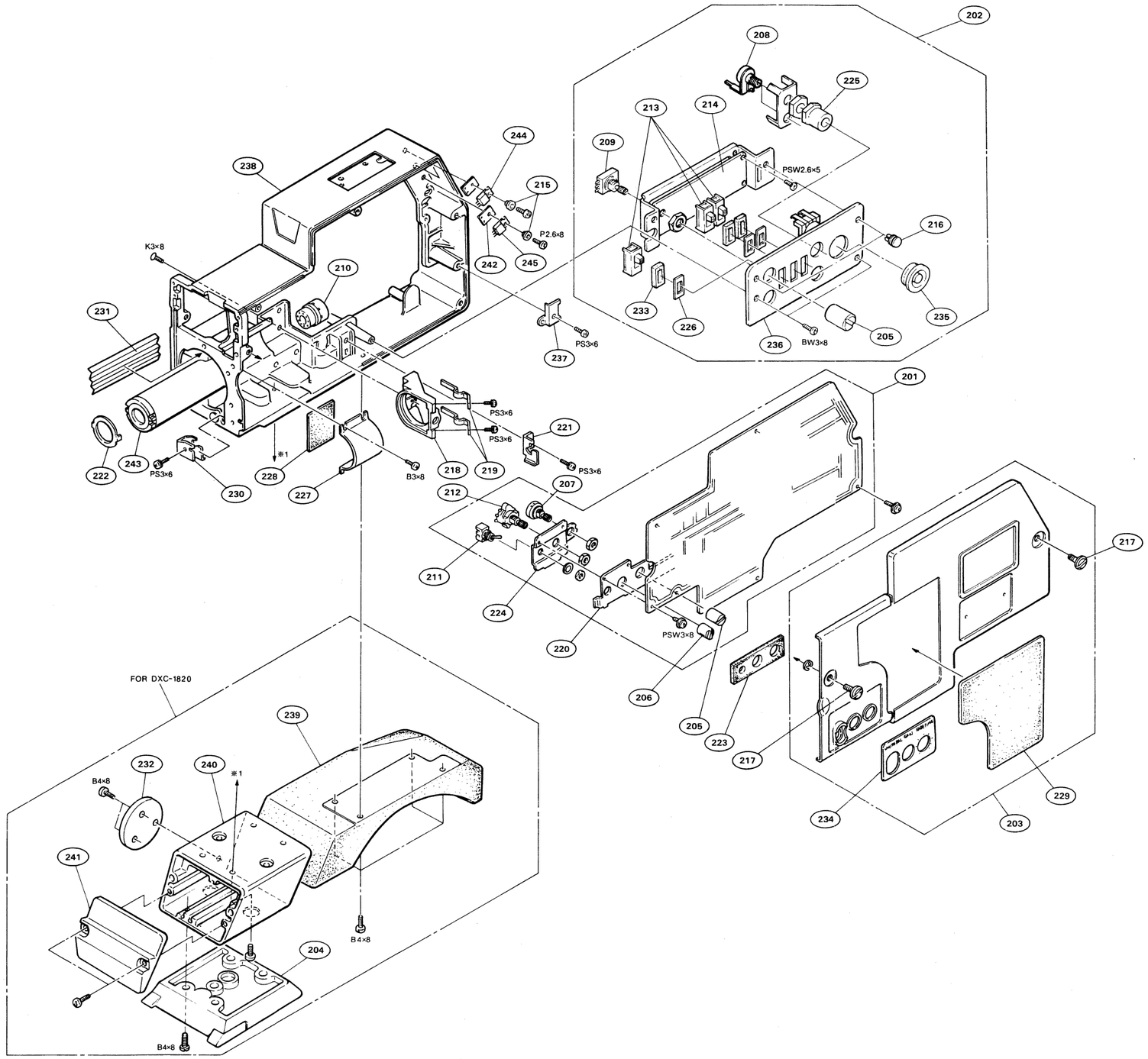
① - - - - - FOR DXC-1820/1820P/1820PM
② - - - - - FOR DXC-1821/1821P

No.	Parts No.	Description
1	A-7513-018-A	MOUNTED CIRCUIT BOARD "IR-5" (②)
2	A-7603-045-00	FRONT CN (N) ASSY (①)
3	A-7603-046-00	FRONT CN (C) ASSY (②)
4	A-7612-218-00	FRONT PANEL (N) ASSY (①)
5	A-7612-219-A	FRONT PANEL (C) ASSY (②)
6	1-547-044-21	DISK, FILTER
7	**1-561-348-00**	**CONNECTOR 8P "C M't REMOTE C M't LENS CN" (②)**
8	**1-561-320-00**	**DIN SOCKET 8P**
9	**1-562-379-00**	**Q-TYPE CONNECTOR 10P "N M't CONNECTOR" (①)**
10	**2-042-385-00**	**CAP, C MOUNT (②)**
11	3-650-703-00	GUIDE, FILTER
12	3-650-730-00	SPRING, FILTER
13	3-650-733-00	SLEEVE, FILTER
14	3-650-734-00	SLEEVE
15	3-650-711-00	RING, GUIDE
16	3-664-216-00	MOUNT, LENS (②)
17	3-664-257-11	PANEL, FRONT (②)
18	3-664-289-00	RING, ADJUSTMENT (②)
19	3-678-684-00	HOLDER, CABLE (①)
20	**3-682-710-00**	**PIN, STOPPER (①)**
21	3-682-720-00	BRACKET, FRONT (①)
22	3-682-721-00	RING, ADJUSTMENT (①)
23	3-682-722-00	GEAR (C), ADJUSTMENT (①)
24	3-682-723-00	GEAR (A), ADJUSTMENT (①)
25	3-682-724-00	GEAR (B), ADJUSTMENT (①)
26	3-682-725-00	RETAINER, GEAR
27	3-682-726-00	RING, ADAPTOR (①)
28	3-682-727-00	BRACKET (N), CONNECTOR (①)
29	3-682-728-02	GUIDE, PANEL (①)
30	3-682-731-02	PANEL (N), FRONT (①)
31	3-682-733-00	BRACKET, CONNECTOR (②)
32	**3-682-734-00**	**CAP, N MOUNT**
33	3-682-715-00	PLATE, ORNAMENTAL, MOUNT
FOR VCL-1010SY		
34	**3-706-840-00**	**LEVER, ZOOM**
35	**3-706-893-00**	**HOOD**
36	**3-706-894-00**	**CAP, HOOD**
37	**3-706-895-00**	**CAP, DUST**
38	**1-557-116-11**	**CABLE WITH CONNECTOR 10P**
FOR VCL-1012SY		
34	**3-707-111-01**	**LEVER, ZOOM**
35	**3-707-108-01**	**HOOD**
36	**3-707-109-01**	**CAP, HOOD**
37	**3-707-110-01**	**CAP, DUST**
38	**1-557-116-21**	**CABLE WITH CONNECTOR 10P**

NOTE:

1. **The shaded and ⚠ -marked components are critical to safety. Replace only with same components as specified.**
2. Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

CHASSIS BLOCK1

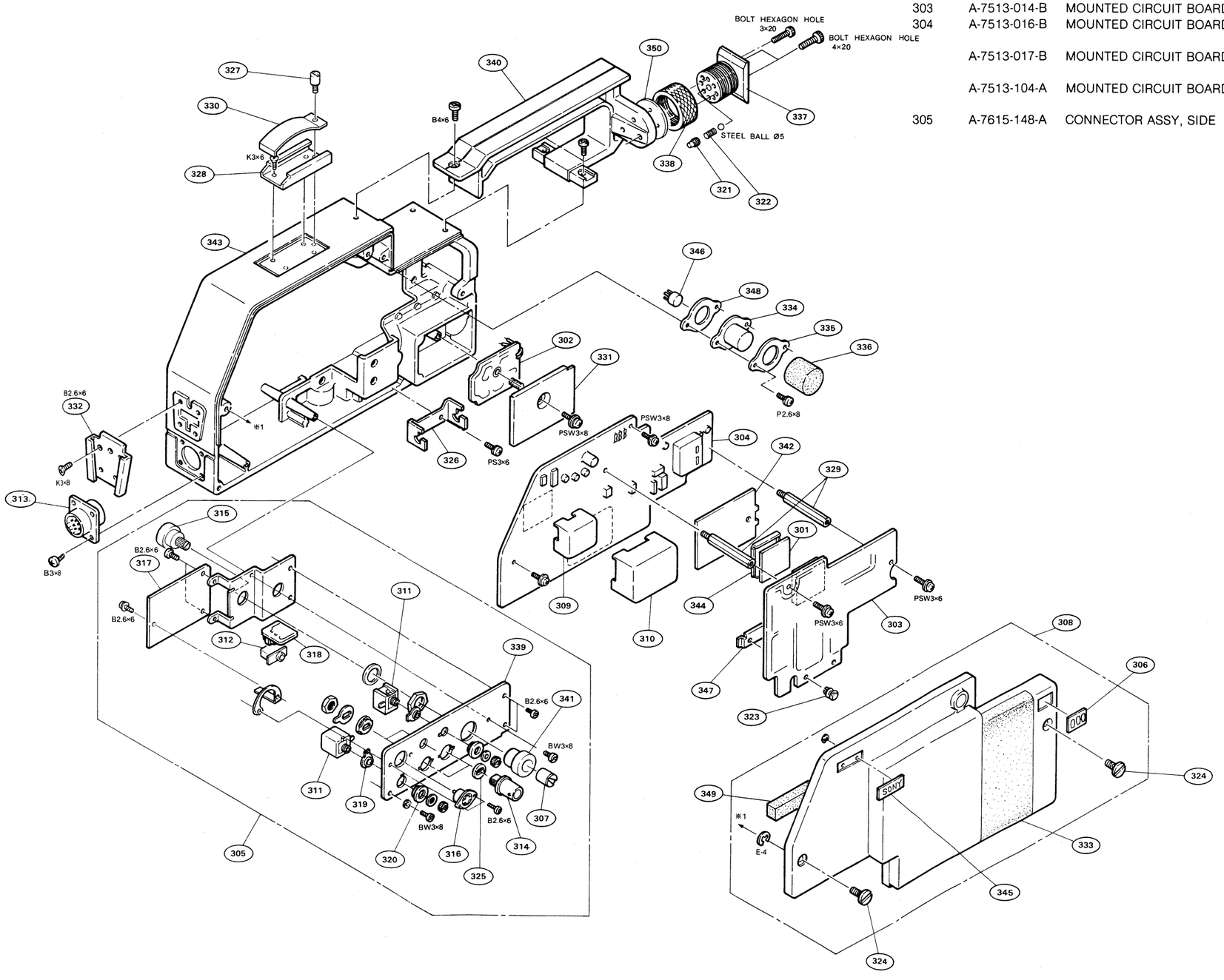


No.	Parts No.	Description
201	A-7513-011-B	MOUNTED CIRCUIT BOARD "CR-21"(NTSC)
	A-7513-012-B	MOUNTED CIRCUIT BOARD "CR-21"(PAL)
	A-7513-103-A	MOUNTED CIRCUIT BOARD "CR-21"(PAL-M)
202	A-7605-051-A	SW ASSY
203	X-3664-211-0	PLATE, SIDE (B) ASSY
204	X-3664-212-0	SHOE ASSY, T
205	**X-3664-208-0**	**KNOB ASSY, "FADE"**
206	**X-3664-209-0**	**KNOB ASSY, "GAIN"**
207	**1-226-916-00**	**CARBON 10K "FADE TIME"**
208	**1-230-139-00**	**CARBON 10K "H PHASE", "SC PHASE"**
209	**1-230-273-00**	**CARBON 20K "WHT BAL FINE"**
210	**1-526-776-11**	**SOCKET ASSY**
211	**1-553-430-00**	**SWITCH, TOGGLE "WHITE BAL" (S2)**
212	**1-554-641-00**	**SWITCH, ROTARY "GAIN SELECT"**
213	**1-554-643-00**	**SWITCH, SLIDE**
214	1-611-219-00	PRINTED CIRCUIT BOARD "CT-45"
215	**2-832-007-00**	**BUSH, INSHULATOR**
216	**3-646-090-11**	**RIVET, NYLON(4x5)**
217	**3-654-323-00**	**SCREW, COVER SET**
218	3-655-315-00	HOLDER, DY
219	3-655-317-00	SPRING
220	3-664-211-00	SUPPORT (1), CR
221	3-664-212-00	SUPPORT (2), CR
222	**3-664-215-00**	**RING, GROUND**
223	3-664-217-00	SPACER, KNOB
224	3-664-224-02	PLATE, VR
225	3-664-227-00	ESCUTCHEON, VOL
226	3-664-230-00	BLIND, SWITCH
227	3-664-231-00	BAND, RADIATION
228	**3-664-238-00**	**SHEET, HEATSINK**
229	3-664-241-11	PAD
230	3-664-249-00	SUPPORT (3), CR
231	3-664-288-00	PLATE, GROUND
232	3-672-233-01	COVER
233	3-682-711-00	CUSHION, SW
234	3-682-714-00	LABEL, CONTROL
235	3-682-716-00	COVER, PUSH SW
236	3-682-729-00	PLATE, SWITCH
237	3-682-736-00	BRACKET, CR BOARD
238	3-682-741-01	CABINET
239	**3-682-742-01**	**PAD, SHOULDER**
240	3-682-743-00	TABLE, TRIPOD
241	3-682-744-01	COVER, TRIPOD TABLE
242	**3-703-037-00**	**INSULATOR, TO-220**
243	**8-701-022-38**	**PICK UP TUBE CT-2232A**
244	**8-729-315-63**	**TRANSISTOR, 2SB856 (Q1,2)**
245	**8-729-831-33**	**TRANSISTOR, 2SD313HP (Q3)**

NOTE:

1. **The shaded and ⚠ -marked components are critical to safety. Replace only with same components as specified.**
2. Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

CHASSIS BLOCK2



No.	Parts No.	Description
301	A-7513-010-A	MOUNTED CIRCUIT BOARD "VE-5"
302	A-7513-013-A	MOUNTED CIRCUIT BOARD "PA-29"
303	A-7513-014-B	MOUNTED CIRCUIT BOARD "PR-46"
304	A-7513-016-B	MOUNTED CIRCUIT BOARD "DF-21" (NTSC)
	A-7513-017-B	MOUNTED CIRCUIT BOARD "DF-21" (PAL)
	A-7513-104-A	MOUNTED CIRCUIT BOARD "DF-21" (PAL-M)
305	A-7615-148-A	CONNECTOR ASSY, SIDE

No.	Parts No.	Description
306	**X-3664-206-0**	**EMBLEM ASSY, TORINICON**
307	**X-3664-208-0**	**KNOB, FADE**
308	X-3664-210-0	PLATE ASSY, SIDE
309	**1-413-163-00**	**UNIT, POWER**
310	**1-464-305-11**	**UNIT, SG (NTSC)**
	1-464-305-21	**UNIT, SG (PAL)**
	1-464-306-31	**UNIT, SG (PAL-M)**
311	**1-507-251-XX**	**JACK, JM-35**
312	**1-507-883-00**	**JACK, SMALL TYPE 4P**
313	1-508-942-00	RECEPTACLE,14P (MALE) "CCQ"
314	**1-509-891-00**	**BNC CONNECTOR "VIDEO OUT" "GEN LOCK IN"**
315	**1-554-642-00**	**SWITCH, ROTARY "VTR SELECT"**
316	**1-561-562-00**	**CONNECTOR 4P WITH SWITCH "EXT DCIN"**
317	1-611-216-00	PRINTED CIRCUIT BOARD "AU-47"
318	1-611-217-00	PRINTED CIRCUIT BOARD "JK-8"
319	**3-437-228-00**	**INSULATOR, JACK (A)**
320	**3-437-229-00**	**INSULATOR, JACK (B)**
321	**3-682-620-00**	**SCREW, ADJUSTMENT**
322	**3-641-622-00**	**SPRING, CONPRESSION**
323	**3-646-090-00**	**RIVET, NYLON**
324	**3-654-323-00**	**SCREW, COVER SET**
325	**3-654-545-00**	**INSULATOR, BNC**
326	3-664-210-00	BRACKET, PR (2)
327	3-664-213-00	SCREW, STOPPER
328	3-664-218-00	SHOE
329	3-664-223-00	SUPPORT, PC BORAD
330	3-664-228-00	SPRING
331	3-664-237-00	CASE, SHIELD, PA
332	3-664-239-11	SHOE, BATTERY
333	3-664-240-00	SHEET, LATHER
334	3-664-248-02	CUSHION, MICROPHONE
335	3-664-278-00	SPACER, MICROPHONE
336	**3-664-280-00**	**SCREEN, MICROPHONE WIND**
337	3-682-718-00	SHOE, VF SLIDE
338	3-682-759-01	RING, LOCK
339	3-682-730-00	PLATE, CN
340	3-682-732-00	HANDLE
341	3-682-735-00	GUARD, SWITCH
342	3-682-737-00	PLATE, SHIELD DF
343	3-682-741-00	CABINET
344	3-682-746-00	LID, SHIELD CASE
345	**4-836-828-00**	**EMBLEM, SONY**
346	**8-814-189-31**	**MICROPHONE, BUILT-IN(C-1007A) "INT MIC"**
347	3-664-209-00	BRACKET, PR (1)
348	3-664-292-00	RETAINER, MICROPHONE CUSHION
349	3-664-281-00	CUSHION, SG
350	3-682-758-01	SPACER

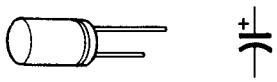
NOTE:

1. Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
2. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

Parts that are not listed in the "reference numbers order list" are shown in following table.
Reference numbers are omitted.

CAPACITOR

ELECTROLYTIC CAPACITOR **0.1μF through 100μF**
6.3WV through 50WV



Parts No. 1-123-□□□-00

Value		Parts No. −□□□−
0.1μF	50V	607
0.22	50	608
0.33	50	609
0.47	50	610
0.68	50	902
1	50	611
2.2	50	612
3.3	35	614
	50	613
4.7	25	616
	35	615
	50	619
10	16	617
	25	621
	35	620
	50	816

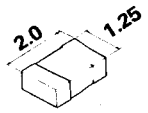
Value		Parts No. −□□□−
22μF	6.3V	618
	10	644
	16	622
	25	818
	35	817
33	6.3	646
	10	645
	16	820
	25	819
47	6.3	647
	10	822
	16	821
100	6.3	661

ABBREVIATION

Ref. No.	DESCRIPTION	Ref. No.	DESCRIPTION	Ref. No.	DESCRIPTION
C	CAPACITOR	FL	FILTER	RV	VARIABLE RESISTOR
CN	CONNECTOR	IC	IC	S	SWITCH
CT	TRIMMER	L	INDUCTOR	T	TRANSFORMER
D	DIODE	LV	VARIABLE INDUCTOR	TM	TIMER
DA	RESISTOR BLOCK	Q	TRANSISTOR	X	CRYSTAL
DL	DELAY LINE	R	RESISTOR		

C. CHIP CERAMIC CONNECTOR

CHIP CERAMIC CAPACITOR



220pF through 0.018μF(B) ± 10% 50WV

0.022μF through 0.068μF(F) $^{+80}_{-20}$ % 50WV

Parts No. 1-163-□□□-00

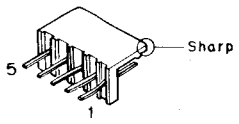
Value	Parts No. – □□□ –
100pF	—
120	—
150	—
180	—
220	001
270	002
330	003
390	004
470	005
560	006
680	007
820	008

Value	Parts No. – □□□ –
0.001μF	009
0.0012	010
0.0015	011
0.0018	012
0.0022	013
0.0027	014
0.0033	015
0.0039	016
0.0047	017
0.0056	018
0.0068	019
0.0082	020

Value	Parts No. – □□□ –
0.01μF	021
0.012	022
0.015	023
0.018	024
0.022	033
0.027	—
0.033	034
0.039	—
0.047	035
0.056	—
0.068	036
0.082	—

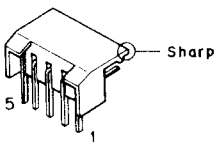
CONNECTOR

top-type receptacle



2P	1-560-356-00
3P	1-560-357-00
4P	1-560-358-00
5P	1-560-359-00
6P	1-560-360-00
8P	1-560-361-00
10P	1-560-362-00
12P	1-560-363-00

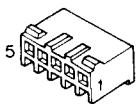
side-type receptacle



2P	1-560-364-00
3P	1-560-365-00
4P	1-560-366-00
5P	1-560-367-00
6P	1-560-368-00
8P	1-560-369-00
10P	1-560-370-00
12P	1-560-371-00

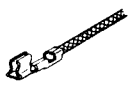
plug

housing



2P	1-561-514-00
3P	1-561-515-00
4P	1-561-516-00
5P	1-561-517-00
6P	1-561-518-00
8P	1-561-519-00
10P	1-561-520-00
12P	1-561-521-00

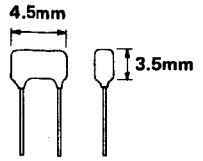
contact



1-560-372-00

RESISTOR

METAL FILM RESISTOR



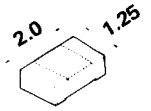
± 1%, 1/8W
10Ω through 33kΩ

Parts No. 1-214-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
10Ω	509	100Ω	533	1.0kΩ	557	10kΩ	581
11	510	110	534	1.1	558	11	582
12	511	120	535	1.2	559	12	583
13	512	130	536	1.3	560	13	584
15	513	150	537	1.5	561	15	585
16	514	160	538	1.6	562	16	586
18	515	180	539	1.8	563	18	587
20	516	200	540	2.0	564	20	588
22	517	220	541	2.2	565	22	589
24	518	240	542	2.4	566	24	590
27	519	270	543	2.7	567	27	591
30	520	300	544	3.0	568	30	592
33	521	330	545	3.3	569	33	593
36	522	360	546	3.6	570		
39	523	390	547	3.9	571		
43	524	430	548	4.3	572		
47	525	470	549	4.7	573		
51	526	510	550	5.1	574		
56	527	560	551	5.6	575		
62	528	620	552	6.2	576		
68	529	680	553	6.8	577		
75	530	750	554	7.5	578		
82	531	820	555	8.2	579		
91	532	910	556	9.1	580		

R. CHIP

CHIP RESISTOR



±5% 1/10W
0Ω through 3.3MΩ

Parts No. 1-216-□□□-00

Value	Parts No. – □□□ –
0Ω	295
1Ω	—
1.1	—
1.2	—
1.3	—
1.5	—
1.6	—
1.8	—
2	—
2.2	298
2.4	301
2.7	302
3	303
3.3	304
3.6	305
3.9	306
4.3	307
4.7	308
5.1	297
5.6	309
6.2	310
6.8	311
7.5	312
8.2	313
9.1	314
10Ω	001
11	002
12	003
13	004
15	005
16	006
18	007
20	008
22	009
24	010
27	011

Value	Parts No. – □□□ –
30	012
33Ω	013
36	014
39	015
43	016
47	017
51	018
56	019
62	020
68	021
75	022
82	023
91	024
100Ω	025
110	026
120	027
130	028
150	029
160	030
180	031
200	032
220	033
240	034
270	035
300	036
330	037
360	038
390	039
430	040
470	041
510	042
560	043
620	044
680	045
750	046
820	047

Value	Parts No. – □□□ –
910	048
1kΩ	049
1.1	050
1.2	051
1.3	052
1.5	053
1.6	054
1.8	055
2	056
2.2	057
2.4	058
2.7	059
3	060
3.3	061
3.6	062
3.9	063
4.3	064
4.7	065
5.1	066
5.6	067
6.2	068
6.8	069
7.5	070
8.2	071
9.1	072
10kΩ	073
11	074
12	075
13	076
15	077
16	078
18	079
20	080
22	081
24	082
27	083

Value	Parts No. – □□□ –
30	084
33kΩ	085
36	086
39	087
43	088
47	089
51	090
56	091
62	092
68	093
75	094
82	095
91	096
100kΩ	097
110	098
120	099
130	100
150	101
160	102
180	103
200	104
220	105
240kΩ	106
270	107
300	108
330	109
360	110
390	111
430	112
470	113
510	114
560	115
620	116
680	117
750	118
820	119

Value	Parts No. – □□□ –
910	120
1MΩ	121
1.1	122
1.2	123
1.3	124
1.5	125
1.6	126
1.8	127
2	128
2.2	129
2.4	130
2.7	131
3	132
3.3	133

Ref. No.	Parts No.	Description
AU COMBINED		
	1-611-216-00	PRINTED CIRCUIT BOARD "AU-47"
	1-611-217-00	PRINTED CIRCUIT BOARD "JK-8"
	8-814-189-31	**MICROPHONE, BUILT-IN C-1007A "INT MIC"**
C4	**1-124-143-00**	**ELECT 100 20% 16V**
C5	**1-124-139-00**	**ELECT 100 20% 10V**
CN1	**1-507-251-13**	**JM-35 M-10 JACK "EXT MIC"**
CN2	**1-507-251-13**	**JM-35 M-10 JACK "EARPHONE"**
CN3	**1-507-883-11**	**JACK, SMALL TYPE 4P "INTERCOM"**
D1	**8-719-100-64**	**RD12EB1**
D2	**8-719-100-64**	**RD12EB1**
Q1	**8-729-100-66**	**2SC1623**
T1	**1-427-506-00**	**OUTPUT**

CR-21 BOARD

	A-7513-011-B	MOUNTED CIRCUIT BOARD "CR-21" (NTSC)
	A-7513-012-B	MOUNTED CIRCUIT BOARD "CR-21" (PAL)
	A-7513-103-A	MOUNTED CIRCUIT BOARD "CR-21" (PAL-M)
C9	**1-163-239-00**	**CERAMIC CHIP 33PF 5% 50V**
C17	**1-163-227-00**	**CERAMIC CHIP 10PF 5% 50V**
C18	**1-163-235-00**	**CERAMIC CHIP 22PF 5% 50V**
C19	**1-163-227-00**	**CERAMIC CHIP 10PF 5% 50V**
C26	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**

Ref. No.	Parts No.	Description
C27	**1-163-239-00**	**CERAMIC CHIP 33PF 5% 50V**
C29	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**
C30	**1-163-239-00**	**CERAMIC CHIP 33PF 5% 50V**
C32	**1-124-133-00**	**ELECT 220 20% 6.3V**
※1 **C33**	**1-102-106-00**	**CERAMIC 100PF 10% 50V (PAL)**
※2	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V (PAL, PAL-M)**
※1 **C34**	**1-102-106-00**	**CERAMIC 100PF 10% 50V (PAL)**
※2	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V (PAL)**
	1-163-247-00	**CERAMIC CHIP 68PF 5% 50V (PAL-M)**
※1 **C35**	**1-102-106-00**	**CERAMIC 100PF 10% 50V (PAL)**
※2	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V (PAL)**
	1-163-243-00	**CERAMIC CHIP 47PF 5% 50V (PAL-M)**
※1 **C36**	**1-102-106-00**	**CERAMIC 100PF 10% 50V (PAL)**
※2	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V (PAL)**
C37	**1-163-227-00**	**CERAMIC CHIP 10PF 5% 50V**
C38	**1-163-231-00**	**CERAMIC CHIP 15PF 5% 50V**
C39	**1-163-227-00**	**CERAMIC CHIP 10PF 5% 50V**
C47	**1-163-243-00**	**CERAMIC CHIP 47PF 5% 50V**
C48	**1-163-243-00**	**CERAMIC CHIP 47PF 5% 50V**
C49	**1-163-225-00**	**CERAMIC CHIP 8PF 0.25PF 50V**
C61	**1-163-227-00**	**CERAMIC CHIP 10PF 5% 50V**
C62	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V (PAL)**
	1-163-247-00	**CERAMIC CHIP 68PF 5% 50V (PAL-M)**
C65	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**
C66	**1-131-377-00**	**TANTALUM 10 10% 10V**
C67	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**
C70	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**
C71	**1-163-247-00**	**CERAMIC CHIP 68PF 5% 50V**
C72	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**
※1 **C83**	**1-161-177-00**	**CERAMIC 2200PF 5% 25V**
C87	**1-131-371-00**	**TANTALUM 10 10% 16V**
C95	**1-163-037-00**	**CERAMIC CHIP 0.022 10% 25V**
C96	**1-163-141-00**	**CERAMIC CHIP 0.001 5% 50V**
C98	**1-163-259-00**	**CERAMIC CHIP 220PF 5% 50V**
※1 **C101**	**1-102-963-00**	**CERAMIC 33PF 5% 50V**
C105	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**
C106	**1-163-267-00**	**CERAMIC CHIP 470PF 5% 50V**
C107	**1-163-251-00**	**CERAMIC CHIP 5% 50V**
C108	**1-131-341-00**	**TANTALUM 0.1 10% 35V**
C109	**1-131-341-00**	**TANTALUM 0.1 10% 35V**

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
C110	1-131-341-00	TANTALUM 0.1 10% 35V
C111	1-131-341-00	TANTALUM 0.1 10% 35V
C112	1-131-341-00	TANTALUM 0.1 10% 35V
C113	1-131-341-00	TANTALUM 0.1 10% 35V
C114	1-131-341-00	TANTALUM 0.1 10% 35V
C122	1-125-299-00	DOUBLE LAYERS 47000 5V
C127	1-124-135-00	ELECT 470 20% 6.3V
C130	1-124-136-00	ELECT 1000 20% 6.3V
C131	1-123-656-00	ELECT 1000 20% 10V
C133	1-125-353-00	DOUBLE LAYERS 62000
C134	1-124-139-00	ELECT 100 20% 10V
C147	1-124-139-00	ELECT 100 20% 10V
C149	1-131-341-00	TANTALUM 0.1 10% 35V
C151	1-163-247-00	CERAMIC CHIP 68PF 5% 50V
C152	1-163-243-00	CERAMIC CHIP 47PF 5% 50V
C153	1-163-243-00	CERAMIC CHIP 47PF 5% 50V
C154	1-163-225-00	CERAMIC CHIP 8PF 0.25PF 50V
C156	1-163-241-00	CERAMIC CHIP 39PF 5% 50V
C157	1-163-259-00	CERAMIC CHIP 220PF 5% 50V
C158	1-124-276-00	ELECT (NOPOLAR) 3.3 20% 35V
C159	1-163-235-00	CERAMIC CHIP 22PF 5% 50V
C162	1-131-371-00	TANTALUM 10 10% 16V
C163	1-131-371-00	TANTALUM 10 10% 16V
C164	1-124-145-00	ELECT 330 20% 16V
※1 C165	1-102-106-00	CERAMIC 100PF 10% 50V
※2	1-163-251-00	CERAMIC CHIP 100PF 5% 50V
C166	1-131-375-00	TANTALUM 4.7 20% 10V
C167	1-131-375-00	TANTALUM 4.7 20% 10V
D1	8-719-100-03	1S2835 (PAL, PAL-M)
D2	8-719-100-03	1S2835 (PAL, PAL-M)
D3	8-719-101-23	1SS123
D5	8-719-100-05	1S2837
D6	8-719-100-05	1S2837
D7	8-719-100-05	1S2837
	DXC-1820 (UC)	10001 ~ 10750
	DXC-1820P(EK)	10001 ~ 10900
	DXC-1821 (UC)	50001 ~ 50150
	DXC-1821P(EK)	50001 ~ 50100
D8	8-719-100-05	1S2837
D9	8-719-100-05	1S2837
D10	8-719-300-76	RH1A
D11	8-719-100-05	1S2837
D12	8-719-100-03	1S2835
D13	8-719-100-03	1S2835
D14	8-719-100-05	1S2837
D15	8-719-100-05	1S2837
D16	8-719-100-05	1S2837
D17	8-719-100-64	RD12EB1
D18	8-719-200-08	11DQ03
D19	8-719-100-05	1S2837
D20	8-719-100-05	1S2837
D21	8-719-100-05	1S2837

Ref. No.	Parts No.	Description
D22	8-719-100-03	1S2835
D23	8-719-100-38	RD6.2EB2
D24	8-719-815-55	1S1555
DA1	1-231-387-00	RESISTOR, BROCK
DL1	1-415-346-11	1H (NTSC, PAL-M)
	1-415-346-21	1H (PAL)
IC1	8-758-160-00	CX816: SONY
IC2	8-759-608-11	CX811: SONY
IC3	8-759-906-46	CX20064: SONY
IC4	8-759-906-59	CX22017: SONY
IC5	8-759-908-17	TL082CPS: TI
IC6	8-759-200-81	TC4053BF: TOSHIBA
IC7	8-759-908-18	TL607CPS: TI
IC8	8-759-200-89	TC4516BF: TOSHIBA
IC9	8-759-906-46	CX20064: SONY
IC10	8-759-906-54	TL064CNS: TI
IC11	8-759-906-54	TL064CNS: TI
IC12	8-759-000-05	MC1496G: MOTOROLA
IC13	8-759-906-53	TL062CPS: TI
IC14	8-759-200-81	TC4053BF: TOSHIBA
IC15	8-759-200-XX	TC4051BF: TOSHIBA
IC16	8-759-908-16	TL072CPS: TI
IC17	8-759-101-12	μPC311G2: NEC
IC18	8-759-906-54	TL064CNS: TI
IC19	8-759-906-54	TL064CNS: TI
IC20	8-759-200-XX	TC4051BF: TOSHIBA
IC21	8-759-200-68	TC4011BF: TOSHIBA
IC22	8-759-605-18	CX518: SONY
IC23	8-759-350-28	HD44750A-28: HITACHI
IC24	8-759-906-53	TL062CPS: TI
IC25	8-759-100-97	μPC339G2: NEC
IC26	8-743-311-00	BX333A: SONY
IC27	8-759-200-81	TC4053BF: TOSHIBA
IC28	8-759-906-53	TL062CPS: TI

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
L1	**1-408-412-00**	**MICRO 18**
L2	**1-408-408-00**	**MICRO 8.2**
L3	**1-408-408-00**	**MICRO 8.2**
L4	**1-408-428-00**	**MICRO 390**
L5	**1-408-428-00**	**MICRO 390**
L7	**1-408-422-00**	**MICRO 120**
L8	**1-408-422-00**	**MICRO 120**
L10	**1-408-416-00**	**MICRO 39 (NTSC, PAL-M)**
L10	**1-408-414-00**	**MICRO 27 (PAL)**
L11	**1-408-416-00**	**MICRO 39 (NTSC, PAL-M)**
L11	**1-408-414-00**	**MICRO 27 (PAL)**
L12	**1-408-413-00**	**MICRO 22**
L13	**1-408-413-00**	**MICRO 22**
L15	**1-408-413-00**	**MICRO 22**
L16	**1-408-413-00**	**MICRO 22**
L17	**1-408-413-00**	**MICRO 22**
L20	**1-408-413-00**	**MICRO 22**
L21	**1-408-413-00**	**MICRO 22**
L22	**1-408-413-00**	**MICRO 22**
L23	**1-408-413-00**	**MICRO 22**
L26	**1-408-413-00**	**MICRO 22**
L27	**1-408-422-00**	**MICRO 120**
L28	**1-408-422-00**	**MICRO 120**
LV1	**1-408-666-00**	**8.2**
LV2	**1-408-666-00**	**8.2**
LV3	**1-407-572-00**	**33**
LV4	**1-407-572-00**	**33**
LV5	**1-407-574-00**	**68**
LV6	**1-407-574-00**	**68**
Q1	**8-729-199-44**	**2SK94**
Q2	**8-729-100-66**	**2SC1623**
Q3	**8-729-100-66**	**2SC1623**
Q4	**8-729-100-66**	**2SC1623**
Q5	**8-729-100-76**	**2SA812**
Q6	**8-729-100-66**	**2SC1623**
Q7	**8-729-100-66**	**2SC1623**
Q8	**8-729-100-76**	**2SA812**
Q9	**8-729-100-66**	**2SC1623**
Q10	**8-729-100-66**	**2SC1623**

Ref. No.	Parts No.	Description
Q11	**8-729-199-44**	**2SK94**
Q13	**8-729-100-66**	**2SC1623**
Q14	**8-729-100-66**	**2SC1623**
Q15	**8-729-100-66**	**2SC1623**
Q16	**8-729-100-66**	**2SC1623**
Q17	**8-729-100-66**	**2SC1623**
Q18	**8-729-100-66**	**2SC1623**
Q19	**8-729-100-76**	**2SA812**
Q20	**8-729-100-66**	**2SC1623**
Q21	**8-729-100-66**	**2SC1623**
Q22	**8-729-100-66**	**2SC1623**
Q23	**8-729-100-66**	**2SC1623**
Q24	**8-729-100-76**	**2SA812**
Q25	**8-729-100-66**	**2SC1623**
Q26	**8-729-100-76**	**2SA812**
Q27	**8-729-100-66**	**2SC1623 (PAL, PAL-M)**
Q28	**8-729-100-66**	**2SC1623**
Q29	**8-729-100-66**	**2SC1623**
Q30	**8-729-100-66**	**2SC1623**
Q31	**8-729-100-66**	**2SC1623**
Q32	**8-729-100-66**	**2SC1623**
Q33	**8-729-100-66**	**2SC1623**
Q34	**8-729-100-76**	**2SA812**
Q35	**8-729-199-44**	**2SK94**
Q36	**8-729-100-76**	**2SA812**
Q37	**8-729-199-44**	**2SK94**
Q38	**8-729-100-66**	**2SC1623**
Q39	**8-729-100-66**	**2SC1623**
Q40	**8-729-100-66**	**2SC1623**
Q41	**8-729-100-66**	**2SC1623**
Q42	**8-729-100-66**	**2SC1623**
Q43	**8-729-100-66**	**2SC1623**
Q44	**8-729-100-66**	**2SC1623**
Q45	**8-729-100-66**	**2SC1623**
Q46	**8-729-100-66**	**2SC1623**
Q47	**8-729-100-66**	**2SC1623**
Q48	**8-729-100-66**	**2SC1623**
Q49	**8-729-100-66**	**2SC1623**
Q50	**8-729-100-76**	**2SA812**
Q51	**8-729-100-66**	**2SC1623**

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
Q52	8-729-100-66	2SC1623
Q53	8-729-100-76	2SA812
Q54	8-729-100-66	2SC1623
Q55	8-729-100-76	2SA812
Q56	8-729-100-66	2SC1623
Q57	8-729-100-66	2SC1623
Q58	8-729-100-66	2SC1623
Q59	8-729-100-76	2SA812
Q60	8-729-199-44	2SK94
Q61	8-729-100-66	2SC1623
Q62	8-729-100-66	2SC1623
Q63	8-729-199-44	2SK94
Q64	8-729-100-66	2SC1623
Q65	8-729-100-66	2SC1623
Q66	8-729-100-66	2SC1623
Q67	8-729-100-66	2SC1623
Q68	8-729-100-66	2SC1623
※1 Q69	8-729-117-54	2SA1175
※2	8-729-100-76	2SA812
※1 Q70	8-729-178-54	2SC2785
※2	8-729-100-66	2SC1623
※1 Q71	8-729-117-54	2SA1175
※2	8-729-100-76	2SA812
※1 Q72	8-729-178-54	2SC2785
※2	8-729-100-66	2SC1623
※1 R77	1-247-903-00	CARBON 1M 5% 1/6W
※1 R81	1-247-843-00	CARBON 3.3K 5% 1/6W
※1 R82	1-247-851-00	CARBON 6.8K 5% 1/6W
※1 R92	1-247-855-00	CARBON 10K 5% 1/6W
※1 R96	1-247-855-00	CARBON 10K 5% 1/6W
R196	1-247-099-00	CARBON 47 5% 1/4W
※2 R234	1-247-875-00	CARBON 68K 5% 1/6W
※1 R317	1-247-847-00	CARBON 4.7K 5% 1/6W
RV1	1-226-702-00	METAL 2.2K
RV2	1-226-702-00	METAL 2.2K
RV3	1-226-773-00	METAL 22K
RV4	1-226-773-00	METAL 22K
RV5	1-226-772-00	METAL 4.7K
RV6	1-226-772-00	METAL 4.7K
RV7	1-226-702-00	METAL 2.2K
RV8	1-226-702-00	METAL 2.2K
RV9	1-226-702-00	METAL 2.2K
RV10	1-226-772-00	METAL 4.7K

Ref. No.	Parts No.	Description
RV11	1-226-770-00	METAL 470
RV12	1-226-703-00	METAL 10K
RV13	1-226-771-00	METAL 1K (PAL, PAL-M)
RV14	1-226-772-00	METAL 4.7K
RV15	1-226-771-00	METAL 1K
RV16	1-226-711-00	SOLID 22K
RV17	1-226-773-00	METAL 22K (PAL, PAL-M)
RV18	1-226-702-00	METAL 2.2K
RV19	1-226-702-00	METAL 2.2K
RV20	1-226-771-00	METAL 1K
RV21	1-226-771-00	METAL 1K
RV22	1-226-702-00	METAL 2.2K
RV23	1-226-775-00	METAL 100K
RV24	1-226-775-00	METAL 100K
RV25	1-226-775-00	METAL 100K
RV26	1-226-775-00	METAL 100K
RV27	1-226-709-00	SOLID 4.7K
RV28	1-226-709-00	SOLID 4.7K
RV29	1-226-775-00	METAL 100K (NTSC, PAL-M)
RV30	1-226-709-00	SOLID 4.7K
RV31	1-226-774-00	METAL 47K
RV32	1-226-774-00	METAL 47K
RV33	1-226-775-00	METAL 100K
RV34	1-226-775-00	METAL 100K
RV35	1-226-775-00	METAL 100K
RV36	1-226-775-00	METAL 100K
RV37	1-226-702-00	METAL 2.2K
RV38	1-226-916-00	CARBON 10K
S1	1-554-641-00	ROTARY
S2	1-553-430-00	TOGGLE
X1	1-527-730-00	CERAMIC 400KHz

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

SW ASSY

Ref. No.	Parts No.	Description
	A-7605-051-A	SW ASSY
	1-611-219-00	PRINTED CIRCUIT BOARD "CT-45"
R2	**1-247-855-00**	**CARBON 10K 5% 1/6W**
R3	**1-247-855-00**	**CARBON 10K 5% 1/6W**
RV1	**1-230-139-00**	**CARBON 10K**
RV2	**1-230-139-00**	**CARBON 10K**
RV3	**1-230-273-00**	**CARBON 20K**
RV4	**1-230-273-00**	**CARBON 20K**
S1	**1-554-643-00**	**SLIDE**
S2	**1-554-643-00**	**SLIDE**
S3	**1-554-643-00**	**SLIDE**
S4	**1-554-658-00**	**KEY**

DF-21 BOARD

Ref. No.	Parts No.	Description
	A-7513-016-B	MOUNTED CIRCUIT BOARD "DF-21" (NTSC)
	A-7513-017-B	MOUNTED CIRCUIT BOARD "DF-21" (PAL)
	A-7513-104-A	MOUNTED CIRCUIT BOARD "DF-21" (PAL-M)
	1-413-163-11	**UNIT, POWER**
	1-464-305-11	**UNIT, SG (NTSC)**
	1-464-305-21	**UNIT, SG (PAL)**
	1-464-305-31	**UNIT, SG (PAL-M)**
	1-526-756-00	**SOCKET, VIDICON**
C2	**1-161-469-00**	**CERAMIC 680PF 5% 50V**
C4	**1-106-212-00**	**MYLAR 0.047 5% 100V**
	DXC-1820 (UC)	10001 ~ 10750
	DXC-1820P(EK)	10001 ~ 10900
	DXC-1821 (UC)	50001 ~ 50150
	DXC-1821P(EK)	50001 ~ 50100
	1-130-483-00	**MICA 0.01 5% 50V**
	DXC-1820 (UC)	10751 ~
	DXC-1820P(EK)	10901 ~
	DXC-1820PM(BR)	10001 ~
	DXC-1821 (UC)	50151 ~
	DXC-1821P(EK)	50101 ~
C5	**1-106-212-00**	**MYLAR 0.047 5% 100V**
C6	**1-161-469-00**	**CERAMIC 680PF 5% 50V**
	DXC-1820 (UC)	10001 ~ 10750
	DXC-1820P(EK)	10001 ~ 10900
	DXC-1821 (UC)	50001 ~ 50150
	DXC-1821P(EK)	50001 ~ 50100
	1-130-483-00	**MICA 0.01 5% 50V**
	DXC-1820 (UC)	10751 ~
	DXC-1820P(EK)	10901 ~
	DXC-1820PM(BR)	10001 ~
	DXC-1821 (UC)	50151 ~
	DXC-1821P(EK)	50101 ~
C8	**1-107-168-00**	**MICA 91PF 5% 500V**
C9	**1-107-168-00**	**MICA 91PF 5% 500V**
C10	**1-108-381-00**	**MYLAR 0.022 10% 100V**
C11	**1-108-381-00**	**MYLAR 0.022 10% 100V**
C12	**1-163-251-00**	**CERAMIC CHIP 100PF 5% 50V**
C13	**1-107-177-00**	**MICA 220PF 5% 500V**

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
C14	1-107-177-00	MICA 220PF 5% 500V
C15	1-163-263-00	CERAMIC CHIP 330PF 5% 50V
C16	1-163-263-00	CERAMIC CHIP 330PF 5% 50V
C17	1-124-145-00	ELECT 330 20% 16V
C20	1-163-038-00	CERAMIC CHIP 0.1 25V
C21	1-124-141-00	ELECT 330 20% 10V
C22	1-124-139-00	ELECT 100 20% 10V
C23	1-124-141-00	ELECT 330 20% 10V
C24	1-124-139-00	ELECT 100 20% 10V
C25	1-124-147-00	ELECT 47 20% 25V
C26	1-124-147-00	ELECT 47 20% 25V
C27	1-121-168-00	ELECT 1 350V
C28	1-123-006-00	ELECT 3.3 350V
C29	1-136-189-00	MYLAR 0.1 10% 250V
C30	1-106-172-00	MYLAR 0.001 5% 100V
C32	1-124-148-00	ELECT 100 20% 25V
C34	1-123-385-00	ELECT 22 20% 100V
C35	1-123-385-00	ELECT 22 20% 100V
C36	1-163-038-00	CERAMIC CHIP 0.1 25V
C37	1-163-038-00	CERAMIC CHIP 0.1 25V
C41	1-124-153-11	ELECT 100 20% 35V
C42	1-163-251-00	CERAMIC CHIP 100P 5% 50V
C44	1-163-137-00	CERAMIC CHIP 680PF 5% 50V
C45	1-163-251-00	CERAMIC CHIP 100PF 5% 50V
C46	1-163-141-00	CERAMIC CHIP 0.001 5% 50V
C49	1-124-284-00	ELECT 10 20% 16V
C51	1-163-263-00	CERAMIC CHIP 330PF 5% 50V
C56	1-131-376-00	TANTALUM 6.8 20% 10V
C57	1-123-579-00	ELECT 470 20% 16V
C59	1-124-139-00	ELECT 100 20% 10V
C63	1-131-373-00	TANTALUM 22 20% 16V
C64	1-102-440-00	CERAMIC 220PF 20% 2KV
C70	1-131-348-00	TANTALUM 1.5 20% 35V
C75	1-163-239-00	CERAMIC CHIP 33PF 5% 50V
C76	1-163-253-00	CERAMIC CHIP 120PF 5% 50V
C78	1-163-239-00	CERAMIC CHIP 33PF 5% 50V
C79	1-163-267-00	CERAMIC CHIP 470PF 5% 50V
C80	1-163-239-00	CERAMIC CHIP 33PF 5% 50V
C81	1-163-239-00	CERAMIC CHIP 33PF 5% 50V
C82	1-163-239-00	CERAMIC CHIP 33PF 5% 50V
C83	1-124-139-00	ELECT 100 20% 10V
※1 C86	1-123-661-00	ELECT 100 20% 6.3V
※2	1-124-140-00	ELECT 220 20% 6.3V
C88	1-124-142-00	ELECT 470 20% 10V
※1 C91	1-102-963-21	CERAMIC 33PF 5% 50V (NTSC)

Ref. No.	Parts No.	Description
※2	1-163-239-00	CERAMIC CHIP 33PF 5% 50V (NTSC)
※1 C91	1-102-106-00	CERAMIC 100PF 10% 50V (PAL)
※2	1-163-251-00	CERAMIC CHIP 100PF 5% 50V (PAL, PAL-M)
※2 C92	1-163-239-00	CERAMIC CHIP 33PF 5% 50V
※1 C93	1-102-971-00	CERAMIC 82PF 5% 50V
※2	1-163-249-00	CERAMIC CHIP 82PF 5% 50V
※1 C94	1-102-971-00	CERAMIC 82PF 5% 50V
※2	1-163-249-00	CERAMIC CHIP 82PF 5% 50V
※1 C95	1-102-107-00	CERAMIC 120PF 10% 50V
※2	1-163-141-00	CERAMIC CHIP 1000PF 5% 50V
C96	1-121-168-00	ELECT SINGLE 1 350V
C97	1-123-382-00	ELECT 3.3 20% 100V
C98	1-123-382-00	ELECT 3.3 20% 100V
C101	1-102-106-00	CERAMIC 100P 10% 50V
	DXC-1820 (UC)	10001 ∼ 10900
	DXC-1820P(EK)	10001 ∼ 11400
	DXC-1821 (UC)	50001 ∼ 50250
	DXC-1821P(EK)	50001 ∼ 50100
	1-163-251-00	CERAMIC CHIP 100P 5% 50V
	DXC-1820 (UC)	10901 ∼
	DXC-1820P(EK)	11401 ∼
	DXC-1820PM(BR)	10001 ∼
	DXC-1821 (UC)	50251 ∼
	DXC-1821P(EK)	50101 ∼
C102	1-102-947-00	CERAMIC 10PF 5% 50V
CN15	1-561-375-11	SOCKET 1P
D1	8-719-100-05	1S2837
D2	8-719-100-05	1S2837
D3	8-719-100-05	1S2837
D4	8-719-200-08	11DQ03
D5	8-719-200-08	11DQ03
D6	8-719-200-08	11DQ03
D7	8-719-200-08	11DQ03
※1 D8	8-719-200-08	11DQ03
※1 D9	8-719-200-08	11DQ03
D10	8-719-300-76	RH1A

※1 UC 10001 ∼ 10180 ※2 UC 10181 ∼
EK 10001 ∼ 10300 EK 10301 ∼

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
D11	8-719-300-76	RH1A
D12	8-719-300-76	RH1A
D13	8-719-300-76	RH1A
D14	8-719-100-05	1S2837
D17	8-719-100-05	1S2837
D18	8-719-100-03	1S2835
D20	8-719-100-05	1S2837
D23	8-719-100-05	1S2837
D24	8-719-100-05	1S2837
D25	8-719-101-23	1SS123
D27	8-719-100-03	1S2835
D29	8-719-100-05	1S2837
D32	8-719-143-07	RD4.3EB
D33	8-719-101-23	1SS123
※1 D34	8-719-815-55	1S1555
※2	8-719-100-03	1S2835
※1 D35	8-719-815-55	1S1555
※2	8-719-100-05	1S2837
※1 D36	8-719-815-55	1S1555
	DXC-1820 (UC)	10001 ~ 10900
	DXC-1820P(EK)	10001 ~ 11400
	DXC-1821 (UC)	50001 ~ 50250
	DXC-1821P(EK)	50001 ~ 50100
D36	8-719-104-26	1S2837
D37	8-719-815-55	1S1555
	DXC-1820 (UC)	10901 ~
	DXC-1820P(EK)	11401 ~
	DXC-1820PM(BR)	10001 ~
	DXC-1821 (UC)	50251 ~
	DXC-1821P(EK)	50101 ~
IC1	8-759-907-79	CX779: SONY
IC2	8-741-117-10	BX1171: SONY
IC3	8-741-117-10	BX1171: SONY
IC4	8-759-902-21	SN74LS221N: TI
IC5	8-759-220-00	TC40H000P: TOSHIBA (PAL, PAL-M)
IC7	8-759-100-96	μPC4558G2: NEC
IC8	8-759-100-96	μPC4558G2: NEC
IC9	8-759-908-17	TL082CPS: TI
IC10	8-759-200-81	TC4053BF: TOSHIBA
IC11	8-759-906-53	TL062CPS: TI
	DXC-1820 (UC)	10001 ~ 10600
	DXC-1820P(EK)	10001 ~ 10650
	8-759-700-09	NJM2043M-D:JRC
	DXC-1820 (UC)	10601 ~
	DXC-1820P(EK)	10651 ~
	DXC-1820PM(BR)	10001 ~
	DXC-1821 (UC)	50001 ~
	DXC-1821P(EK)	50001 ~

Ref. No.	Parts No.	Description
IC12	8-759-940-98	CD4098BE: RCA
	DXC-1820 (UC)	10001 ~ 11930
	DXC-1820P(EK)	10001 ~ 14290
	DXC-1821 (UC)	50001 ~ 50720
	DXC-1821P(EK)	50001 ~ 50260
	8-759-245-38	TC4538BP: TOSHIBA
	DXC-1820 (UC)	11931 ~
	DXC-1820P(EK)	14291 ~
	DXC-1820PM(BR)	10001 ~
	DXC-1821 (UC)	50721 ~
	DXC-1821P(EK)	50261 ~
IC13	8-759-906-07	TL607CP: TI
※1 IC14	8-759-220-02	TC40H002P: TOSHIBA
※2	8-759-201-60	TC40H002F: TOSHIBA
L1	1-421-013-00	HOLIZONTAL CHOKE 25MH
L2	1-408-428-00	MICRO 390
L3	1-408-416-00	MICRO 39
L4	1-408-416-00	MICRO 39
L5	1-421-013-00	HOLIZONTAL CHOKE 25MH
L6	1-421-013-00	HOLIZONTAL CHOKE 25MH
Q1	8-729-100-66	2SC1623
Q2	8-729-100-66	2SC1623
Q3	8-729-100-66	2SC1623
Q4	8-729-216-22	2SA1162
Q5	8-729-216-22	2SA1162 (PAL, PAL-M)
Q6	8-729-200-46	2SD1160
Q7	8-729-200-46	2SD1160
Q8	8-729-109-43	2SK94
Q9	8-729-100-66	2SC1623
Q10	8-729-100-66	2SC1623
※1 Q11	8-729-804-13	2SA773-13
Q12	8-729-216-22	2SA1162
Q13	8-729-109-44	2SK94
Q14	8-729-100-66	2SC1623
Q15	8-729-100-66	2SC1623
Q16	8-729-100-66	2SC1623
Q17	8-729-100-66	2SC1623
Q18	8-729-100-66	2SC1623
Q19	8-729-100-66	2SC1623
Q20	8-729-216-22	2SA1162

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
Q21	8-729-100-66	2SC1623
Q22	8-729-100-66	2SC1623 (PAL)
Q23	8-729-100-66	2SC1623
Q24	8-729-100-66	2SC1623
Q25	8-729-216-22	2SA1162
Q26	8-729-100-66	2SC1623
Q27	8-729-216-22	2SA1162
Q28	8-729-100-66	2SC1623
Q29	8-729-100-66	2SC1623
Q30	8-729-216-22	2SA1162
Q31	8-729-216-22	2SA1162
Q32	8-729-100-66	2SC1623
Q33	8-729-216-22	2SA1162
Q34	8-729-216-22	2SA1162
Q36	8-729-178-54	2SC2785
Q37	8-729-216-22	2SA1162
Q38	8-729-100-66	2SC1623
Q39	8-729-100-66	2SC1623
Q40	8-729-100-66	2SC1623
Q41	8-729-216-22	2SA1162
Q42	8-729-100-66	2SC1623
Q43	8-729-100-66	2SC1623
Q44	8-729-216-22	2SA1162
Q45	8-729-216-22	2SA1162
Q46	8-729-216-22	2SA1162
Q47	8-729-100-66	2SC1623
Q48	8-729-216-22	2SA1162
Q49	8-729-255-12	2SC2551
Q50	8-729-200-17	2SA1091
Q51	8-729-255-12	2SC2551
Q52	8-729-100-66	2SC1623
Q53	8-729-216-22	2SA1162
Q54	8-729-100-66	2SC1623
※1 Q55	8-729-178-54	2SC2785
※2	8-729-100-66	2SC1623
※1 Q56	8-729-178-54	2SC2785
※2	8-729-100-66	2SC1623
R4	1-214-961-00	METAL 750K 1% 1/4W
R6	1-214-775-00	METAL 82K 1% 1/4W
R10	1-214-962-00	METAL 820K 1% 1/4W
R12	1-214-781-00	METAL 150K 1% 1/4W
R19	1-247-099-00	CARBON 47 5% 1/4W
R20	1-247-099-00	CARBON 47 5% 1/4W
R23	1-214-955-00	METAL 430K 1% 1/4W
R25	1-214-971-00	METAL 2M 1% 1/4W
R31	1-214-786-00	METAL 240K 1% 1/4W
R32	1-214-781-00	METAL 150K 1% 1/4W

Ref. No.	Parts No.	Description
R33	1-214-785-00	METAL 220K 1% 1/4W
※1 R97	1-247-804-00	CARBON 75 5% 1/6W
R148	1-214-953-00	METAL 360K 1% 1/4W
R149	1-214-964-00	METAL 1M 1% 1/4W
	DXC-1820 (UC)	10001 ~ 10750
	DXC-1820P(EK)	10001 ~ 10900
	DXC-1821 (UC)	50001 ~ 50150
	DXC-1821P(EK)	50001 ~ 50100
R148	1-215-462-00	METAL 51K 1% 1/6W
R149	1-215-472-00	METAL 130K 1% 1/6W
	DXC-1820 (UC)	10751 ~ 11930
	DXC-1820P(EK)	10901 ~ 14540
	DXC-1821 (UC)	50151 ~ 50720
	DXC-1821P(EK)	50101 ~ 50260
R148	1-215-454-00	METAL 24K 1% 1/6W
R149	1-215-465-00	METAL 68K 1% 1/6W
	DXC-1820 (UC)	11931 ~
	DXC-1820P(EK)	14541 ~
	DXC-1820PM(BR)	10001 ~
	DXC-1821 (UC)	50721 ~
	DXC-1821P(EK)	50261 ~
※1 R167	1-247-819-00	CARBON 330 5% 1/6W
※1 R168	1-247-863-00	CARBON 22K 5% 1/6W
※1 R170	1-247-831-00	CARBON 1K 5% 1/6W
※1 R171	1-247-831-00	CARBON 1K 5% 1/6W
※1 R172	1-247-849-00	CARBON 5.6K 5% 1/6W
※1 R173	1-247-847-00	CARBON 4.7K 5% 1/6W
※1 R174	1-247-847-00	CARBON 4.7K 5% 1/6W
R175	1-247-871-00	CARBON 47K 5% 1/6W
R176	1-247-831-00	CARBON 1K 5% 1/6W
R177	1-247-815-00	CARBON 220 5% 1/6W
R179	1-247-871-00	CARBON 47K 5% 1/6W
	DXC-1820 (UC)	10001 ~ 10900
	DXC-1820P(EK)	10001 ~ 11400
	DXC-1821 (UC)	50001 ~ 50250
	DXC-1821P(EK)	50001 ~ 50100
R175	1-216-089-00	CHIP 47K 5% 1/10W
R176	1-216-049-00	CHIP 1K 5% 1/10W
R179	1-216-089-00	CHIP 47K 5% 1/10W
	DXC-1820 (UC)	10901 ~
	DXC-1820P(EK)	11401 ~
	DXC-1820PM(BR)	10001 ~
	DXC-1821 (UC)	50251 ~
	DXC-1821P(EK)	50101 ~
R300	1-247-855-00	CARBON 10K
R301	1-215-462-00	METAL 51K 1% 1/6W
R302	1-215-472-00	METAL 130K 1% 1/6W

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
RV1	**1-226-704-00**	**METAL 470K**
RV2	**1-226-776-00**	**METAL 220K**
RV3	**1-226-703-00**	**METAL 10K**
RV4	**1-226-704-00**	**METAL 470K**
RV5	**1-226-704-00**	**METAL 470K**
RV6	**1-226-703-00**	**METAL 10K**
RV7	**1-226-711-00**	**SOLID 22K**
RV8	**1-226-710-00**	**SOLID 10K**
RV9	**1-226-710-00**	**SOLID 10K**
RV10	**1-226-774-00**	**METAL 47K**
RV13	**1-226-769-00**	**METAL 100**
RV14	**1-226-702-00**	**METAL 2.2K**
RV15	**1-226-771-00**	**METAL 1K**
RV16	**1-226-703-00**	**METAL 10K**
RV17	**1-226-703-00**	**METAL 10K**
RV18	**1-226-703-00**	**METAL 10K**
RV19	**1-226-703-00**	**METAL 10K**
RV20	**1-226-769-00**	**METAL 100**
RV21	**1-226-710-00**	**SOLID 10K**
RV22	**1-226-713-00**	**SOLID 100K**
RV27	**1-226-753-00**	**SOLID 47K**
T1	**1-433-219-00**	**COUPLING**
T2	**1-433-219-00**	**COUPLING**
T3	**1-447-722-00**	**CONVERTER**
T4	**1-427-487-00**	**OUTPUT**
TM1	**1-548-119-00**	**CLOCK**

IR-5 BOARD (DXC-1821/1821P)

A-7513-018-A MOUNTED CIRCUIT BOARD "IR-5"

IC1	**8-759-101-12**	**μPC324G2: NEC**
IC2	**8-759-200-81**	**TC4053BF: TOSHIBA**
Q1	**8-729-100-66**	**2SC1623**
Q2	**8-729-100-76**	**2SA812**
Q3	**8-729-100-66**	**2SC1623**
Q4	**8-729-100-66**	**2SC1623**
Q5	**8-729-100-76**	**2SA812**
RV1	**1-228-394-00**	**METAL 4.7K**
RV2	**1-228-394-00**	**METAL 4.7K**

Ref. No.	Parts No.	Description

PA-29 BOARD

A-7513-013-A MOUNTED CIRCUIT BOARD "PA-29"

C3	**1-131-379-00**	**TANTALUM 22 10% 10V**
C4	**1-163-247-00**	**CERAMIC CHIP 68PF 5% 50V**
	DXC-1820 (UC)	10001 ~ 10180
	DXC-1820P(EK)	10001 ~ 10300
	1-163-243-00	**CERAMIC CHIP 47PF 5% 50V**
	DXC-1820 (UC)	10181 ~
	DXC-1820P(EK)	10301 ~
CT1	**1-141-204-00**	**6-20PF TRIMMER**
	DXC-1820 (UC)	10001 ~ 10180
	DXC-1820P(EK)	10001 ~ 10300
	1-141-245-00	**5.2-30PF TRIMMER**
	DXC-1820 (UC)	10181 ~
	DXC-1820P(EK)	10301 ~
L1	**1-408-536-41**	**PERCIVAL 150**
L2	**1-408-425-00**	**MICRO 220**
L3	**1-408-425-00**	**MICRO 220**
L4	**1-408-425-00**	**MICRO 220**
Q1	**8-765-423-00**	**2SK152-3**
Q2	**8-729-122-63**	**2SA1226**
Q3	**8-729-101-25**	**2SC1009A**
Q4	**8-729-122-63**	**2SA1226**
Q5	**8-729-101-25**	**2SC1009A**
R1	**1-208-259-00**	**MICRO (HIGH MEGA OHM) 10M**
※1 R15	**1-247-839-00**	**CARBON 2.2K 5% 1/6W**
T1	**1-437-105-00**	**DRIVE**

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

PR-46 BOARD

Ref. No.	Parts No.	Description
	A-7513-014-B	MOUNTED CIRCUIT BOARD "PR-46"
C1	1-123-308-00	ELECT 220 20% 10V
C2	1-163-038-00	CERAMIC CHIP 0.1 25V
C3	1-163-265-00	CERAMIC CHIP 390PF 5% 50V
C4	1-124-288-00	ELECT (NONPOLAR) 22 20% 10V
C6	1-131-361-00	TANTALUM 2.2 10% 16V
C9	1-131-349-00	TANTALUM 2.2 10% 35V
C12	1-163-231-00	CERAMIC CHIP 15PF 5% 50V
C13	1-163-233-00	CERAMIC CHIP 18PF 5% 50V
C14	1-163-234-00	CERAMIC CHIP 20PF 5% 50V
C19	1-124-271-00	ELECT (NONPOLAR) 1 20% 50V
C29	1-131-341-00	TANTALUM 0.1 10% 35V
C32	1-163-038-00	CERAMIC CHIP 0.1 25V
C40	1-131-345-11	TANTALUM 0.47 10% 35V
C41	1-123-308-00	ELECT 220 20% 10V
C43	1-163-038-00	CERAMIC CHIP 0.1 25V
C44	1-124-284-00	ELECT 10 20% 16V
C45	1-163-038-00	CERAMIC CHIP 0.1 25V
C47	1-123-295-00	ELECT 100 20% 6.3V
C49	1-163-038-00	CERAMIC CHIP 0.1 25V
C50	1-123-295-00	ELECT 100 20% 6.3V
C52	1-163-038-00	CERAMIC CHIP 0.1 25V
C53	1-123-296-00	ELECT 220 20% 6.3V
C54	1-131-347-00	TANTALUM 1 10% 35V
C56	1-163-251-00	CERAMIC CHIP 100PF 5% 50V
C57	1-131-344-00	TANTALUM 0.33 10% 35V
C58	1-124-275-00	ELECT 2.2 20% 35V
C60	1-124-271-00	ELECT 1 20% 50V
C61	1-163-038-00	CERAMIC CHIP 0.1 25V
C62	1-131-349-00	TANTALUM 2.2 10% 35V
C63	1-123-307-00	ELECT 100 20% 10V
C64	1-131-341-00	TANTALUM 0.1 10% 35V
C67	1-123-308-00	ELECT 220 20% 10V
C69	1-124-133-00	ELECT 220 20% 6.3V
C71	1-123-307-00	ELECT 100 20% 10V
C72	1-131-341-00	TANTALUM 0.1 10% 35V
C76	1-163-251-00	CERAMIC CHIP 100PF 5% 50V
C77	1-163-251-00	CERAMIC CHIP 100PF 5% 50V
C81	1-163-232-00	CERAMIC CHIP 16PF 5% 50V
C82	1-130-483-11	MYLAR 0.01 5% 50V

Ref. No.	Parts No.	Description
D1	8-719-100-05	1S2837
D2	8-713-220-00	1T32-2
D5	8-719-100-05	1S2837
D6	8-719-100-05	1S2837
D7	8-719-100-05	1S2837
D9	8-719-101-23	1SS123
D10	8-719-100-05	1S2837
D12	8-719-100-05	1S2837
D13	8-713-220-00	1T32-2
DL1	1-415-347-00	0.55μS
DL2	1-415-193-00	0.15μS
FL1	1-231-344-00	TRAP 4.5MHz
IC1	8-759-906-53	TL062CPS: TI
IC2	8-759-014-96	MC1496P: MOTOROLA
IC3	8-758-150-00	CX815: SONY
IC4	8-752-201-41	CX22014: SONY
IC5	8-759-200-81	TC4053BF: TOSHIBA
IC6	8-759-100-96	μPC4558G2: NEC
IC7	8-759-100-94	μPC358G2: NEC
IC9	8-759-201-00	TC4052BF: TOSHIBA
IC10	8-759-200-81	TC4053BF: TOSHIBA

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
L1	**1-421-013-00**	**HORIZONTAL CHOKE 25**
L2	**1-421-013-00**	**HORIZONTAL CHOKE 25**
L3	**1-408-415-00**	**MICRO 33**
L5	**1-408-421-00**	**MICRO 100**
L6	**1-408-421-00**	**MICRO 100**
L7	**1-408-421-00**	**MICRO 100**
L8	**1-408-421-00**	**MICRO 100**
L9	**1-408-425-00**	**MICRO 220**
Q1	**8-729-101-25**	**2SC1009A**
Q2	**8-729-100-66**	**2SC1623**
Q3	**8-729-100-66**	**2SC1623**
Q4	**8-729-100-76**	**2SA812**
Q5	**8-729-100-66**	**2SC1623**
Q6	**8-729-100-66**	**2SC1623**
Q7	**8-765-450-20**	**2SK125**
Q8	**8-729-109-44**	**2SK94**
Q9	**8-729-100-66**	**2SC1623**
Q10	**8-729-109-44**	**2SK94**
Q11	**8-729-109-44**	**2SK94**
Q12	**8-729-109-44**	**2SK94**
Q13	**8-729-100-66**	**2SC1623**
Q14	**8-729-100-66**	**2SC1623**
Q15	**8-729-100-66**	**2SC1623**
Q16	**8-729-100-66**	**2SC1623**
Q20	**8-729-101-25**	**2SC1009A**
Q21	**8-729-100-66**	**2SC1623**
Q22	**8-729-100-66**	**2SC1623**
Q23	**8-729-100-66**	**2SC1623**
Q24	**8-729-100-76**	**2SA812**
Q25	**8-729-100-76**	**2SA812**
Q26	**8-729-100-66**	**2SC1623**
Q27	**8-729-100-66**	**2SC1623**
Q28	**8-729-100-66**	**2SC1623**
Q29	**8-729-100-66**	**2SC1623**
Q30	**8-729-100-66**	**2SC1623**
Q31	**8-729-100-76**	**2SA812**
Q32	**8-729-100-76**	**2SA812**
Q33	**8-729-100-66**	**2SC1623**

Ref. No.	Parts No.	Description
Q34	**8-729-100-66**	**2SC1623**
Q35	**8-729-100-76**	**2SA812**
Q36	**8-729-100-76**	**2SA812**
Q37	**8-729-100-66**	**2SC1623**
Q38	**8-729-101-25**	**2SC1009A**
Q39	**8-729-100-66**	**2SC1623**
Q42	**8-729-100-66**	**2SC1623**
Q46	**8-729-100-76**	**2SA812**
Q47	**8-729-100-66**	**2SC1623**
Q48	**8-729-100-66**	**2SC1623**
Q49	**8-729-100-76**	**2SA812**
※1 Q50	**8-729-117-54**	**2SA1175**
※2	**8-729-100-76**	**2SA812**
Q52	**8-729-100-66**	**2SC1623**
Q53	**8-729-100-76**	**2SA812**
Q54	**8-729-100-76**	**2SA812**
Q55	**8-729-100-66**	**2SC1623**
Q56	**8-729-100-66**	**2SC1623**
Q57	**8-729-100-76**	**2SA812**
Q58	**8-729-100-66**	**2SC1623**
Q59	**8-729-100-66**	**2SC1623**
Q60	**8-729-101-25**	**2SC1009A**
Q61	**8-729-100-66**	**2SC1623**
Q62	**8-729-100-76**	**2SA812**
Q63	**8-729-100-66**	**2SC1623**
Q64	**8-729-100-66**	**2SC1623**
Q65	**8-729-101-25**	**2SC1009A**
Q66	**8-729-100-66**	**2SC1623**
Q67	**8-729-100-66**	**2SC1623**
Q68	**8-729-100-76**	**2SA812**
Q69	**8-729-100-66**	**2SC1623**
Q70	**8-729-109-44**	**2SK94**
Q71	**8-729-100-66**	**2SC1623**
Q72	**8-729-100-66**	**2SC1623**
Q73	**8-729-100-66**	**2SC1623**
Q74	**8-729-100-66**	**2SC1623**
Q75	**8-729-109-44**	**2SK94**

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
R59	**1-247-877-11**	**CARBON 82K 5% 1/6W**
R68	**1-247-851-00**	**CARBON 6.8K 5% 1/6W**
R69	**1-247-839-00**	**CARBON 2.2K 5% 1/6W**
	DXC-1820 (UC)	10001 ~ 10900
	DXC-1820P(EK)	10001 ~ 11400
	DXC-1821 (UC)	50001 ~ 50250
	DXC-1821P(EK)	50001 ~ 50100
※1 R126	**1-247-831-00**	**CARBON 1K 5% 1/8W**
※1 R127	**1-247-855-00**	**CARBON 10K 5% 1/8W**
R300	**1-247-856-00**	**CARBON 11K 5% 1/6W**
R301	**1-247-858-00**	**CARBON 13K 5% 1/6W**
	DXC-1820 (UC)	10001 ~ 10600
	DXC-1820P(EK)	10001 ~ 10650
RV1	**1-226-771-00**	**METAL 1K**
RV2	**1-226-708-00**	**SOLID 2.2K**
RV3	**1-226-708-00**	**SOLID 2.2K**
RV4	**1-226-709-00**	**SOLID 4.7K**
RV5	**1-226-702-00**	**METAL 2.2K**
RV6	**1-226-703-00**	**METAL 10K**
RV7	**1-226-708-00**	**SOLID 2.2K**
RV8	**1-226-702-00**	**METAL 2.2K**
RV9	**1-226-702-00**	**METAL 2.2K**
RV10	**1-226-702-00**	**METAL 2.2K**
RV12	**1-226-708-00**	**SOLID 2.2K**
RV13	**1-226-709-00**	**SOLID 4.7K**
RV15	**1-226-709-00**	**SOLID 4.7K**
RV16	**1-226-753-11**	**SOLID 47K**
	DXC-1820 (UC)	10001 ~ 10180
	DXC-1820P(EK)	10001 ~ 10300
	1-226-710-00	**SOLID 10K**
	DXC-1820 (UC)	10181 ~
	DXC-1820P(EK)	10301 ~
RV17	**1-226-710-00**	**SOLID 10K**
RV18	**1-226-708-00**	**SOLID 2.2K**
RV19	**1-226-702-00**	**METAL 2.2K**
RV20	**1-226-710-00**	**SOLID 10K**
RV21	**1-226-708-00**	**SOLID 2.2K**
RV22	**1-226-708-00**	**SOLID 2.2K**
RV23	**1-226-708-00**	**SOLID 2.2K**
RV24	**1-226-702-00**	**METAL 2.2K**
RV26	**1-226-702-00**	**METAL 2.2K**

Ref. No.	Parts No.	Description

VE-5 BOARD

NOTE: DXC-1820 Serial No. 10181 and higher
DXC-1821 Serial No. 10001 and higher
DXC-1820P Serial No. 10301 and higher
DXC-1821P Serial No. 10001 and higher
DXC-1820PM Serial No. 10001 and higher

A-7513-010-A	MOUNTED CIRCUIT BOARD "VE-5" (NTSC, PAL-M)
A-7513-015-A	MOUNTED CIRCUIT BOARD "VE-5" (PAL)

C7	**1-163-235-00**	**CERAMIC CHIP 22PF 5% 50V**
C8	**1-163-249-00**	**CERAMIC CHIP 82PF 5% 50V**
C9	**1-163-255-00**	**CERAMIC CHIP 150PF 5% 50V**
C20	**1-163-235-00**	**CERAMIC CHIP 22PF 5% 50V**
C21	**1-163-247-00**	**CERAMIC CHIP 68PF 5% 50V**
C22	**1-163-235-00**	**CERAMIC CHIP 22PF 5% 50V**
C31	**1-102-246-00**	**CERAMIC 47PF 10% 150V**
C32	**1-102-363-00**	**CERAMIC 0.001 50V**
C33	**1-102-363-00**	**CERAMIC 0.001 50V**
C34	**1-102-246-00**	**CERAMIC 47PF 10% 150V**
D1	**8-719-101-23**	**1SS123**
D3	**8-719-101-23**	**1SS123**
D4	**8-719-101-98**	**1SS97**
IC1	**8-759-201-98**	**TL8703P: TOSHIBA**

※1 UC 10001 ~ 10180 ※2 UC 10181 ~
EK 10001 ~ 10300 EK 10301 ~

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
L1	1-408-421-00	MICRO 100
L2	1-408-419-00	MICRO 68 (NTSC)
L3	1-408-419-00	MICRO 68 (NTSC)
Q1	8-729-663-47	2SC1364
Q2	8-729-100-66	2SC1623
Q3	8-729-101-25	2SC1009A
Q4	8-729-100-66	2SC1623
Q6	8-729-100-66	2SC1623
Q7	8-729-100-66	2SC1623
Q8	8-729-100-66	2SC1623
Q9	8-729-100-66	2SC1623
Q10	8-729-100-76	2SA812
RV1	1-226-772-00	METAL 4.7K
X1	1-567-155-11	10.738635MHz (NTSC, PAL-M)
X1	1-567-155-21	10.654505MHz (PAL)

VE-5 BOARD

NOTE: DXC-1820 Up to 10180
DXC-1820P Up to 10300

A-7513-010-A	MOUNTED CIRCUIT BOARD "VE-5" (NTSC)
A-7513-015-A	MOUNTED CIRCUIT BOARD "VE-5" (PAL)

C7	1-163-234-00	CERAMIC CHIP 20PF 5% 50V
C8	1-163-263-00	CERAMIC CHIP 330PF 5% 50V
C9	1-163-255-00	CERAMIC CHIP 150PF 5% 50V
C10	1-163-038-00	CERAMIC CHIP 0.1 25V
C17	1-163-038-00	CERAMIC CHIP 0.1 25V

Ref. No.	Parts No.	Description
C19	1-163-038-00	CERAMIC CHIP 0.1 25V
C20	1-163-235-00	CERAMIC CHIP 22PF 5% 50V
C21	1-163-251-00	CERAMIC CHIP 100PF 5% 50V (NTSC)
C21	1-163-243-00	CERAMIC CHIP 47PF 5% 50V (PAL)
C22	1-163-247-00	CERAMIC CHIP 68PF 5% 50V
C29	1-163-038-00	CERAMIC CHIP 0.1 25V (PAL)
C31	1-102-246-00	CERAMIC 47PF 10% 150V
C32	1-102-363-00	CERAMIC 0.001 50V
C33	1-102-363-00	CERAMIC 0.001 50V
C34	1-102-246-00	CERAMIC 47PF 10% 150V
D1	8-719-101-23	1SS123
D3	8-719-101-23	1SS123
D4	8-719-101-98	1SS97
L1	1-408-421-00	MICRO 100 (NTSC)
L1	1-407-169-XX	MICRO 100 (PAL)
L2	1-408-422-00	MICRO 120 (NTSC)
L2	1-407-165-XX	MICRO 47 (PAL)
L3	1-408-422-00	MICRO 120 (NTSC)
L3	1-407-165-XX	MICRO 47 (PAL)
Q1	8-729-663-47	2SC1364
Q2	8-729-100-66	2SC1623
Q3	8-729-101-25	2SC1009A
Q4	8-729-100-66	2SC1623
Q5	8-729-100-66	2SC1623
Q6	8-729-100-66	2SC1623
Q7	8-729-100-66	2SC1623
Q8	8-729-100-66	2SC1623
Q9	8-729-100-66	2SC1623
Q10	8-729-216-22	2SA1162
RV1	1-226-772-00	METAL 4.7K (NTSC)
RV1	1-226-702-00	METAL 2.2K (PAL)
RV2	1-226-702-00	METAL 2.2K (PAL)

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

FRAME, PACKING/ACC

Ref. No.	Parts No.	Description
FRAME		
	1-136-197-00	**FILM 0.0047 10% 400V**
	1-508-942-00	**RECEPTACLE, 14P MALE CCQ**
	1-547-044-21	DISK, FILTER
	1-561-562-00	**CONNECTOR 4P WITH SWITCH EXT DC IN**
	8-701-022-38	**PICK UP TUBE CT-2232A**
CN1	**1-561-320-00**	**DIN 8P VF**
CN2	**1-562-379-00**	**CONNECTOR 10P N M't CONNECTOR (DXC-1820/1820P/1820PM)**
CN2	**1-561-348-00**	**CONNECTOR 8P C M't REMOTE (DXC-1821/1821P)**
CN3	**1-561-348-00**	**CONNECTOR 8P C M't LENS CN (DXC-1821/1821P)**
CN102	**1-509-891-00**	**BNC CONNECTOR VIDEO OUT**
CN103	**1-509-891-00**	**BNC CONNECTOR GEN LOCK IN**
D1	**8-719-100-64**	**RD12EB1**
D2	**8-719-100-64**	**RD12EB1**
Q1	**8-729-315-63**	**2SB856**
Q2	**8-729-315-63**	**2SB856**
Q3	**8-729-831-33**	**2SD313HP**
RV238	**1-226-916-00**	**CARBON 10K "FADE TIME"**
S101	**1-554-642-00**	**ROTARY "VTR SELECT"**
S201	**1-554-641-00**	**ROTARY "GAIN SELECT"**
S202	**1-553-430-00**	**TOGGLE "WHT BAL"**

Ref. No.	Parts No.	Description
PACKING MATERIAL & ACCESSORIES (SUPPLIED)		
	1-508-929-00	**PLUG, 14P MALE Q-TYPE**
	1-557-116-00	**CABLE (WITH CONNECTOR) 10P**
	1-561-043-00	**PLUG, 14P FEMALE Q-TYPE**
	2-042-385-00	**CAP, C MOUNT (DXC-1821/1821P)**
	3-682-734-00	**CAP, N MOUNT (DXC-1820/1820P/1820PM)**
(FOR VCL-1010SY)		
	3-706-840-00	**LEVER, ZOOM**
	3-706-893-00	**HOOD**
	3-706-894-00	**CAP, HOOD**
	3-706-895-00	**CAP, DUST**
(FOR VCL-1012SY)		
	3-707-111-01	**LEVER, ZOOM**
	3-707-108-01	**HOOD**
	3-707-109-01	**CAP, HOOD**
	3-707-110-01	**CAP, DUST**
	3-557-116-21	**CABLE, WITH CONNECTOR 10P**
	3-773-608-11	**MANUAL, INSTRUCTION (DXC-1820P)**
	3-773-608-21	**MANUAL, INSTRUCTION (DXC-1820)**
(FOR DXC-1820/1820P, DXC-1820K/1820PK, DXC-1820KA/1820PKA, DXC-1820PMK)		
	3-682-749-01	CARTON, INDIVIDUAL (DXC-1820/1820P)
	3-682-750-01	CARTON, INDIVIDUAL (DXC-1820K)
	3-682-764-01	CARTON, INDIVIDUAL (DXC-1820KA)
	3-682-751-01	CARTON, INDIVIDUAL (DXC-1820PK)
	3-682-765-01	CARTON, INDIVIDUAL (DXC-1820PKA)
	3-682-749-01	CARTON, INDIVIDUAL (DXC-1820PMK)
	3-682-752-01	CUSHION, UPPER
	3-682-753-01	CUSHION, LOWER
	3-701-630-01	**BAG, POLY FOR MANUAL**
	3-701-641-02	**BAG, POLY FOR CAMERA**
(FOR DXC-1821/1821P)		
	3-682-754-01	CARTON INDIVIDUAL
	3-682-756-01	CUSHION, UPPER
	3-682-757-01	CUSHION, LOWER
	3-701-630-01	**BAG, POLY FOR MANUAL**
	3-701-634-01	**BAG, POLY CAMERA**

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description	Ref. No.	Parts No.	Description

STANDARD PRODUCT

ZOOM LENS VCL-1010SY
(F1.6, f10.5--105mm)

ZOOM LENS VCL-1012SY
(F1.6, f10.5--126mm)

FIXTURE

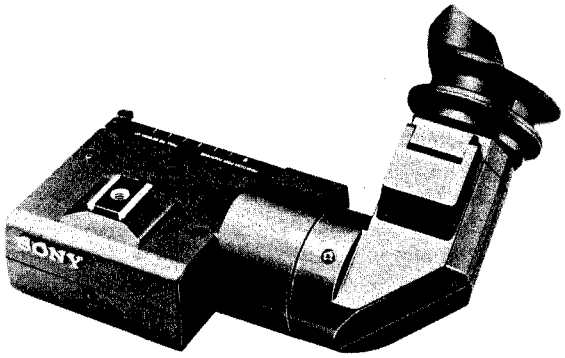
J-6020-170-A	MECHANICAL FOCUS ADJUSTMENT JIG (DXC-1821/1821P)
J-6022-400-A	4.5MHz OSCILLATOR JIG (NTSC, PAL-M)
J-6023-420-A	4.5MHz OSCILLATOR JIG (PAL)
J-6025-820-A	ND FILTER (DXC-1820/1820P/1820PM)
J-6020-490-A	PATTERN BOX, PTB-100 (FOR 90 to 130 Vac) WITH COLOR BAR CHART (J-6020-250-A)
J-6020-680-A	PATTERN BOX, PTB-220 (FOR 190 to 240 Vac) WITH COLOR BAR CHART (J-6020-250-A)
J-6024-340-B	SIEMENS STAR CHART
J-6026-130-A	GRAY SCALE CHART
J-6023-640-A	SONY SPECIFIED VECTOR SCOPE SCALE
J-6023-790-A	YELLOW FILTER
J-6040-070-A	ECCENTRIC SCREWDRIVER

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

DXF-1820
DXF-1820CE

1.5-INCH ELECTRONIC VIEWFINDER

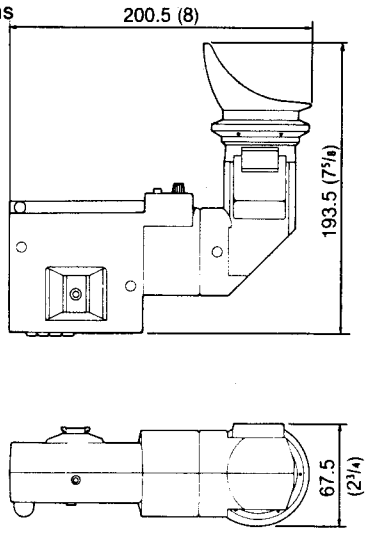


SPECIFICATION

Viewfinder (DXF-1820/1820CE)

Picture tube	1.5-inch monochrome
Indicators	REC/WB/TALLY indicator, BATT indicator, LOW LIGHT indicator, 18 dB indicator
Resolution	400 lines
Power requirements	12 V dc
Power consumption	2.1 W
Weight	Approx. 600 g (1 lb 5 oz)

Dimensions



Unit : mm (inches)

SONY®

SERVICE MANUAL

TABLE OF CONTENTS

1. GENERAL DESCRIPTION

1-1. Location and Function of Parts 1-1
1-2. How to Attach the Camera 1-2
1-3. Precautions 1-3
1-4. Operation 1-3

2. REPLACEMENT OF MAIN PARTS

2-1. Replacement of cathode-ray tube 2-1

3. ALIGNMENT

3-1. Equipment Required 3-1
3-2. Preparation 3-1
  3-2-1. Connection 3-1
  3-2-2. Disassembling 3-1
3-3. Alignment 3-2
  3-3-1. 9V Regulator Adjustment 3-2
  3-3-2. Focus Adjustment 3-2
  3-3-3. H. Hold Adjustment 3-3
  3-3-4. V. Hold Adjustment 3-3
  3-3-5. Deflection Yoke Tilt Adjustment 3-4
  3-3-6. V. H. Deflection Size Adjustment 3-4
  3-3-7. Centering Adjustment 3-5
  3-3-8. FB Pulse Width Adjustment 3-5
  3-3-9. Bright Cal Adjustment 3-5

4. DIAGRAM

4-1. Block Diagram 4-1
4-2. Mounting Diagram 4-3
4-3. Schematic Diagram 4-5

5. SPARE PARTS

5-1. Parts Information 5-1
5-2. Exploded view 5-3
5-4. Electrical Parts List 5-5

SAFETY RELATED COMPONENT WARNING

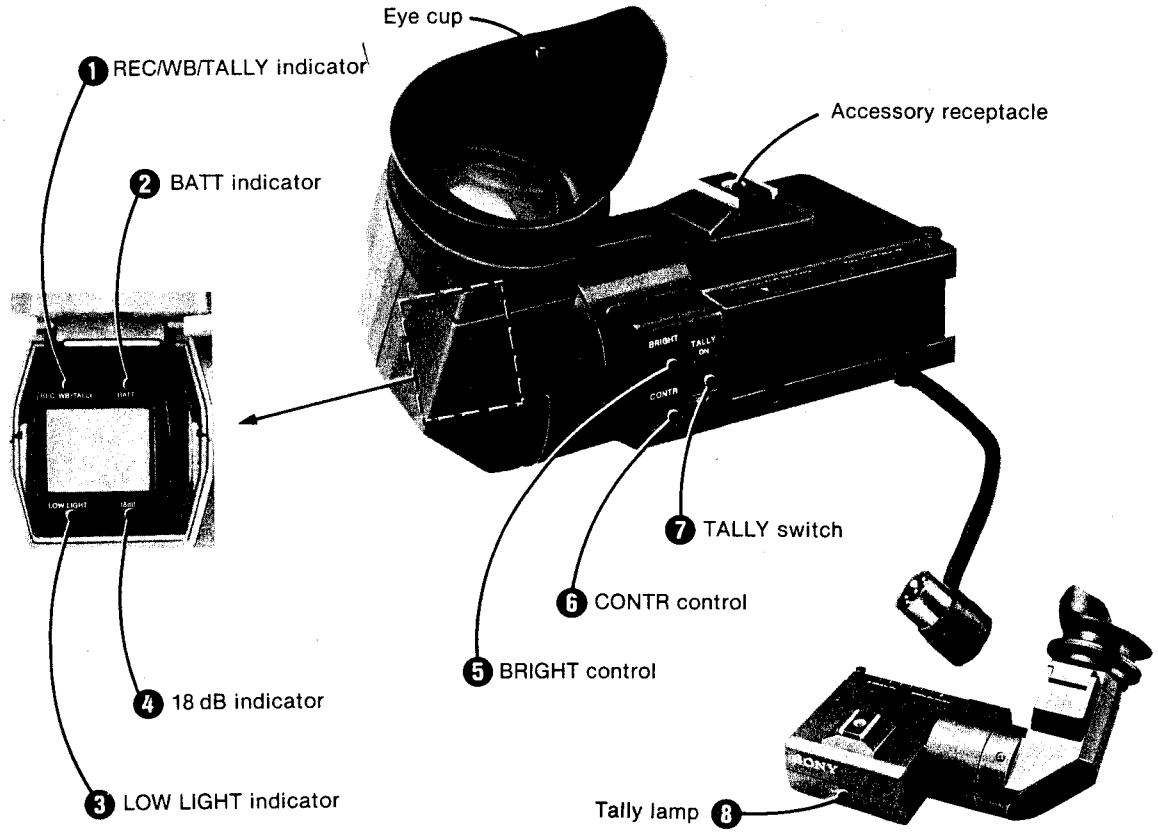
Components identified by shading and ⚠ marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

X-RAY RADIATION WARNING

Be sure that parts replacement in the high voltage block and adjustments made to the high voltage circuits are carried out precisely in accordance with the procedures given in this manual.

SECTION 1
GENERAL DESCRIPTION

1-1. LOCATION AND FUNCTION OF PARTS AND CONTROLS



❶ REC/WB/TALLY (record/white balance/tally) indicator
Illuminates during recording with a VTR connected to the camera, and illuminates when the camera's picture is selected by a control console, a special-effects generator, etc., connected to the camera control unit (CCU) which is connected to the camera.
During automatic white balance adjustment, the indicator illuminates when the automatic white balance adjustment has been completed, and then goes off after a few seconds. The indicator blinks in accordance with the warning system of the VTR.

❷ BATT (battery) indicator
Starts blinking several minutes before the battery of the camera, VTR or CCU is discharged to a level at which it cannot power the camera, VTR or CCU (about 11 V), and illuminates steadily when the battery has discharged to that level.

❸ LOW LIGHT indicator
Illuminates when the video output level from the camera is too low because of insufficient lighting. (Even if the indicator is illuminated, the camera will operate, but the recording will be at a low video level.)

❹ 18 dB indicator
Illuminates when the GAIN selector of the camera is set to 18 dB.

❺ BRIGHT (brightness) control
Adjusts the brightness of the picture on the viewfinder screen. To obtain a brighter picture, turn this control clockwise.

Note: This control does not affect the output signal of the camera.

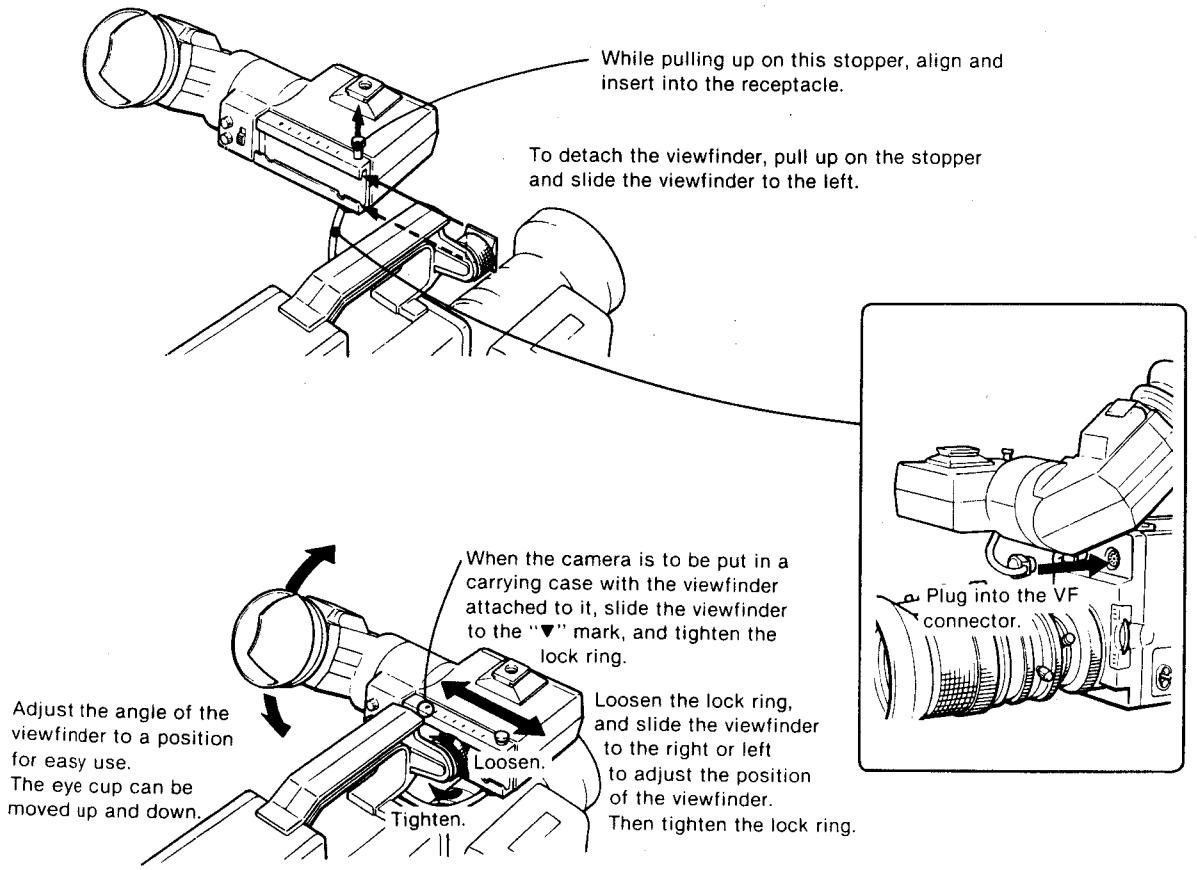
❻ CONTR (contrast) control
Adjusts the contrast of the picture on the viewfinder screen.

Note: This control does not affect the output signal of the camera.

❼ TALLY switch
The tally lamp ❽ can be turned on and off, if necessary, by setting this switch to ON or OFF.

❽ Tally lamp
When the TALLY switch ❼ is set to ON, this lamp operates the same as the REC/WB/TALLY indicator ❶

1-2. HOW TO ATTACH THE VIEWFINDER

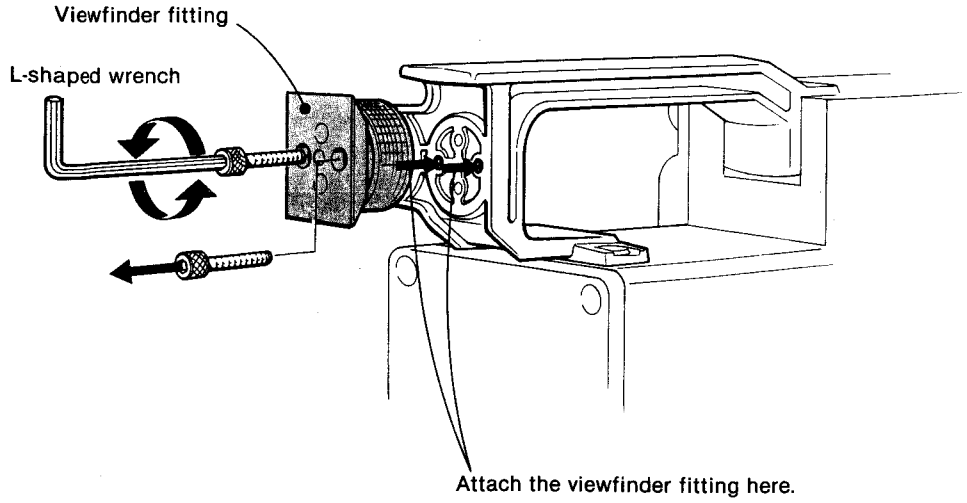

While pulling up on this stopper, align and insert into the receptacle.
To detach the viewfinder, pull up on the stopper and slide the viewfinder to the left.
Plug into the VF connector.
When the camera is to be put in a carrying case with the viewfinder attached to it, slide the viewfinder to the "▼" mark, and tighten the lock ring.
Adjust the angle of the viewfinder to a position for easy use.
The eye cup can be moved up and down.
Loosen.
Tighten.
Loosen the lock ring, and slide the viewfinder to the right or left to adjust the position of the viewfinder.
Then tighten the lock ring.

How to use the viewfinder with the left eye

If you wish to use the viewfinder with your left eye, change the position of the viewfinder fitting on the front of the carrying handle of the camera as shown.

Note

If the viewfinder fitting is attached to the position for left eye use, be sure that the viewfinder is detached before placing the camera inside a carrying case.



1-3. PRECUTIONS

On operation

- Do not use the unit in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Do not point the viewfinder directly at the sun, or the plastic inside the viewfinder may be damaged.
- Do not use the viewfinder outside the temperature extremes of −10°C to +45°C (14°F to 113°F).
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Allow adequate air circulation to prevent internal heat build-up.
- Do not expose the unit to the extremely high temperature and humidity.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or soft cloth lightly moistened with mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

On repacking

Do not discard the carton. It affords maximum protection whenever the unit is transported.

1-4. OPERATION

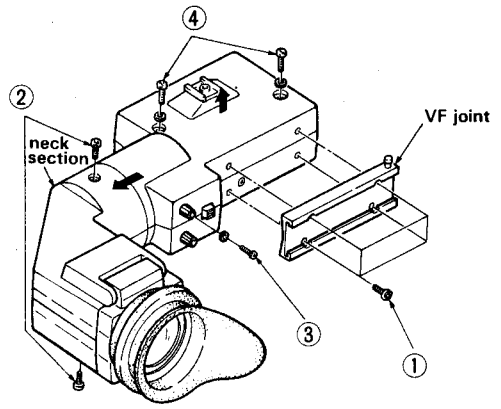
1 Turn on the power to the camera ; the power is supplied to the viewfinder automatically.
2 Adjust the position and angle of the viewfinder screen for easy viewing as shown in "HOW TO ATTACH TO THE CAMERA".
3 Adjust the CONTR and BRIGHT controls for the best picture.
4 While recording, the picture from the camera appears on the screen, and the REC/TALLY indicator lights.

- When the recorder is in the playback mode, the playback picture appears on the screen.
- The settings of the CONTR and BRIGHT controls do not affect the video output signal of the camera.
- When the BRIGHT control is turned fully counterclockwise, the picture does not appear on the screen.

SECTION 2
REPLACEMENT OF MAIN PARTS

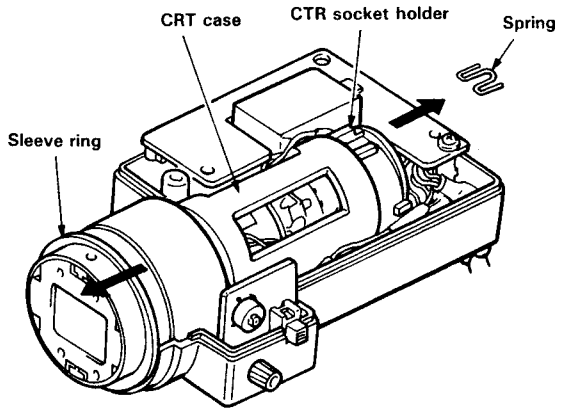
2-1. REPLACEMENT OF CATHODE-RAY TUBE

STEP 1.



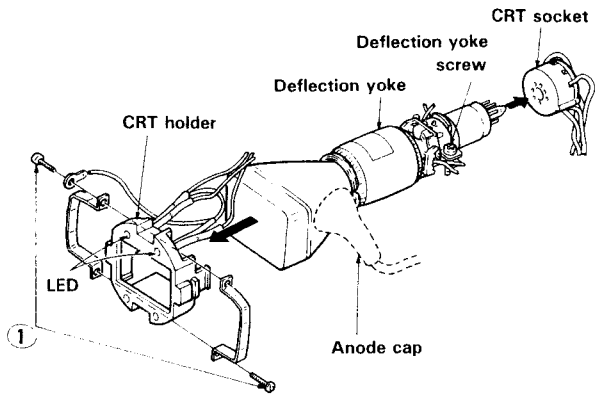
1. Remove the four screws ① and remove the VF joint.
2. Remove the two screws ② and remove the neck section in the direction of the arrow.
3. Remove a fixing screw securing the knob ③ and remove the knob.
4. Remove the two screws ④ and remove the upper case in the direction of the arrow.

STEP 2.



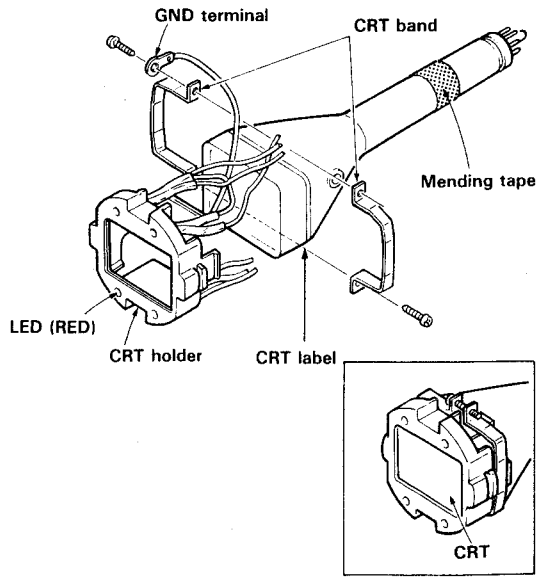
1. Pull the spring in the direction of the arrow.
2. Remove the CRT case assembly by spreading the CRT socket holder.
3. Pull the sleeve ring in the direction of the arrow and the CRT case assembly can be branched off into two.

STEP 3.



1. Remove the two screws ① and remove the CRT band so that the CRT holder can be removed.
2. Remove the CRT socket and anode cap.
3. Loosen the deflection yoke screw and pull the CRT off of the deflection yoke.

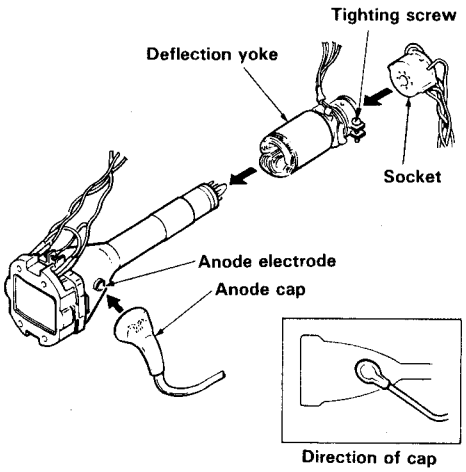
STEP 4.



1. Wrap mending tape around the DY tightening section of the new CRT.
2. Insert the CRT holder and CRT band as shown in the figure.

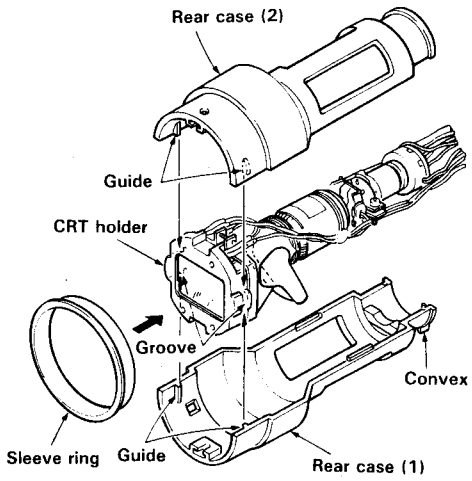
Note: Be sure that a space of the CRT band is about 4 mm.

STEP 5.



1. Insert the deflection yoke and tight the tightening screw.
2. Attach the anode cap to the CRT as shown in the figure.

STEP 6.

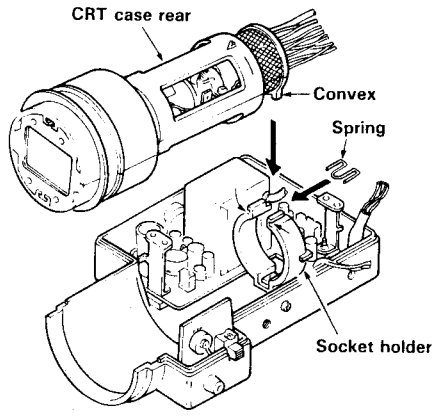


1. After adding the guide of the rear case (1) to the groove portion of the CRT holder, install them.

Note:
- The anode lead should be below of the CRT.
- The convex in the CRT rear case (1) is as shown in the figure.

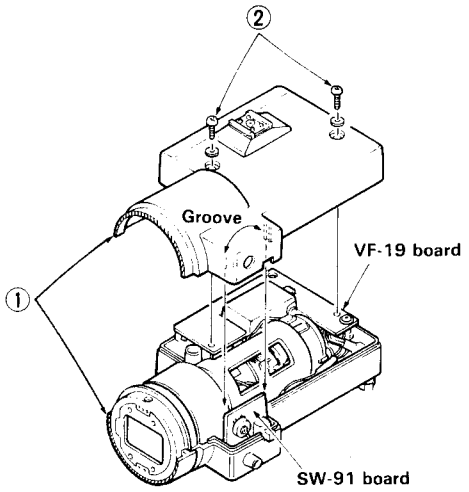
2. Install the CRT rear case (2) to the CRT rear case (1).
3. Insert the sleeve ring to the CRT rear case in the direction of the arrow.

STEP 7.



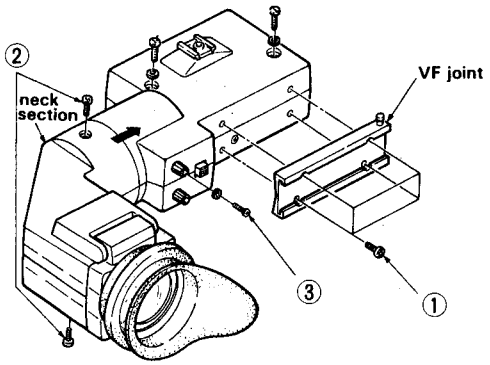
1. Coat the greese at the shaded portion of the CRT case rear.
2. Insert the CRT case rear to the CRT socket holder under the convex of CRT case rear.
3. Insert the spring in the direction of the arrow as shown in the figure.

STEP 8.



1. Add the groove of upper cover to SW-91 board so that the upper cover can be installed ①, and tight the two screws ②.

STEP 9.



1. Attach the BRIGHT control knob by fixing the screw ③.
2. Attach the neck section and fix the two screws ②.
3. Attach the VF joint and fix four screws ①.

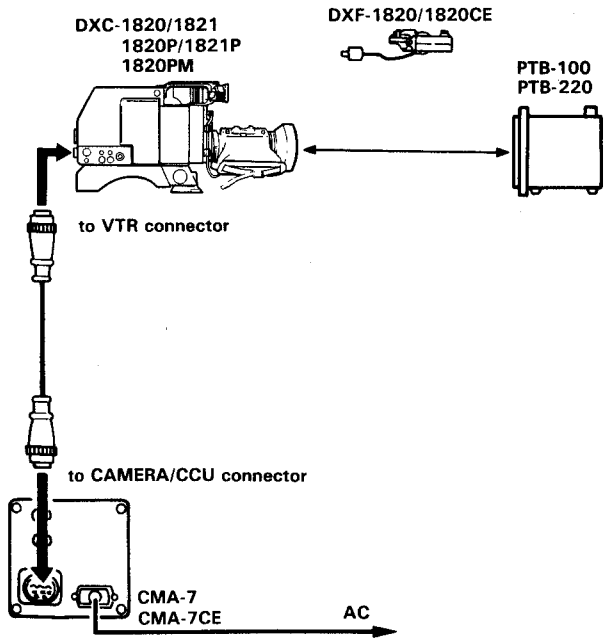
SECTION 3
ALIGNMENT

3-1. EQUIPMENT REQUIRED

1. Pattern Box. PTB-100: (AC90 to 130V)
   SONY Parts No. J-6020-490-A
   Pattern Box. PTB-220 (AC190 to 240V)
   SONY Parts No. J-6820-680-A
2. Resolution Pattern :
   SONY Parts No. J-6021-870-A
3. Dual-Trace Oscilloscope
4. Monitor TV (reduced scan)
5. Video Camera, DXC-1820/DXC-1821
   DXC-1820P/DXC-1821P
   DXC-1820PM
   (completed the adjustments)
6. AC Adaptor, CMA-7/7CE
7. DC Voltmeter

3-2. PREPARATION

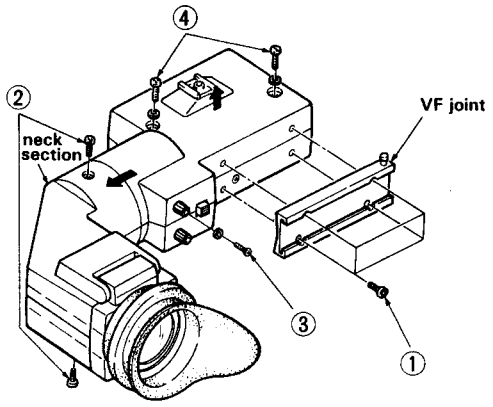
3-2-1. Connection



Note: Set the video camera and the pattern box at the horizontal position.

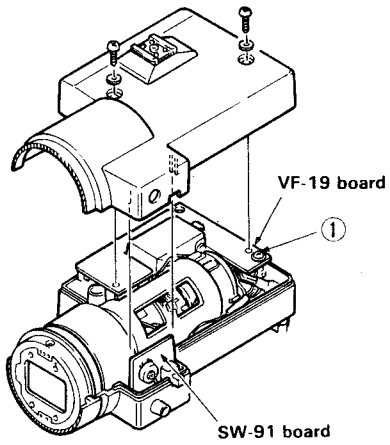
3-2-2. Disassembling

STEP 1.



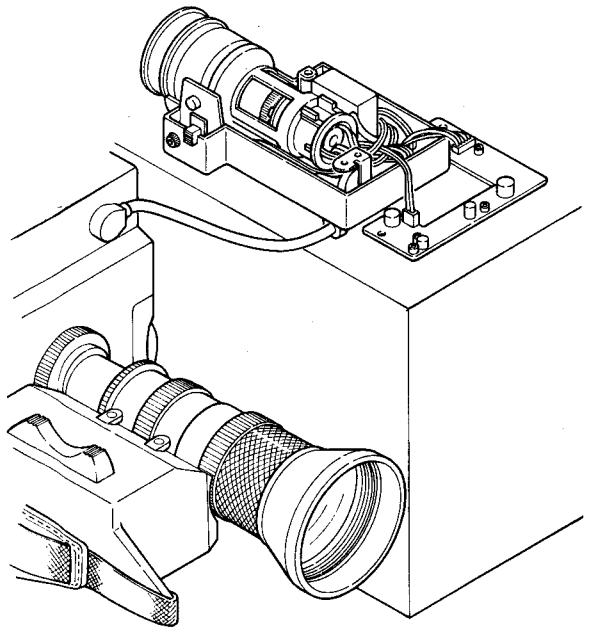
1. Remove the four screws ① and remove the VF joint.
2. Remove the two screws ② and remove the neck section in the direction of the arrow.
3. Remove a fixing screw securing the knob ③ and remove the knob.
4. Remove the two screws ④ and remove the upper case in the direction of the arrow.

STEP 2.



1. Remove the screw ①.

STEP 3.



1. Remove the VF-19 board and place the viewfinder on the stand. Connect the VF cable to the camera as shown above. And then carry out the adjustment.

After the adjustment is completed, assemble the viewfinder by reversing the steps.

3-3. ALIGNMENT

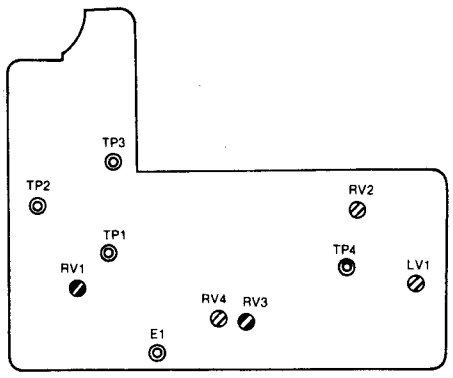
3-3-1. 9V Regulator Adjustment

Equipment : DC Voltmeter
Test point : TP1 (GND:E1)/VF-18 board
Adj point : ◐RV1/VF-18 board
Spec : 9.0 ± 0.05 Vdc

3-3-2. Focus Adjustment

Object : Resolution Pattern
Preparation : 1. CONTR → Fully clockwise↻
2. BRIGHT → Mechanical center
3. Using ◐ RV4 (BRIGHT)/VF-18 board, adjust the focus so that the gradation on the resolution pattern is best recognizable.
Adjustment : Shoot the resolution pattern and adjust ◐ RV3/VF-18 board for the best resolution of the viewfinder picture.
Spec : Center on the frame
· Horizontal ..... more than 300
· Vertical ..... more than 350

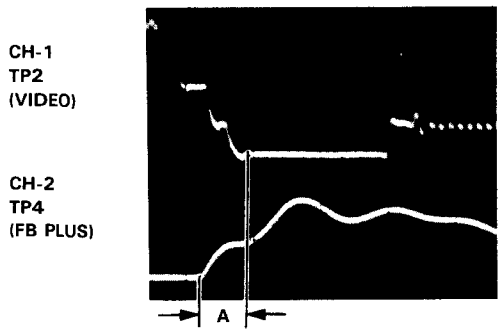
Note: After completing this adjustment, be sure to carry out 3-3-6. H.V Deflection Size Adjustment.

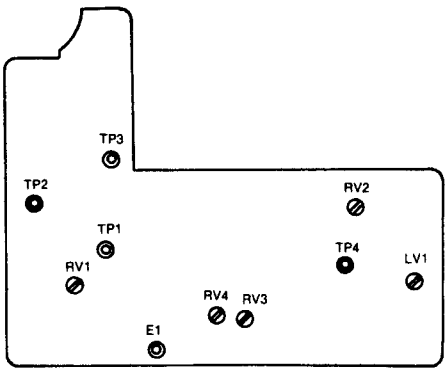


VF-18 board (component side)

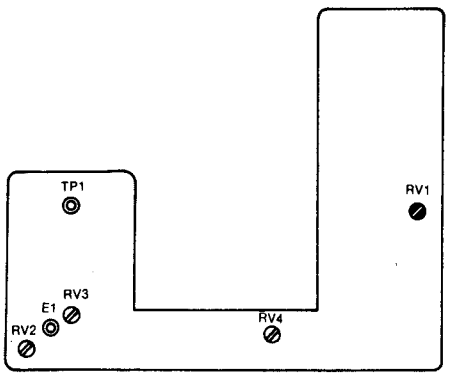
3-3-3. H Hold Adjustment

Equipment : Dual-trace Oscilloscope
Test point : CH1 TP2 (GND:E1)/VF-18 board
CH2 TP4 (GND:chassis)/VF-18 board
Mode : ALT
Trig : TP4/VF-18 board
Adj point : ◐RV1/VF-19 board
Spec : A = [0.7 ± 0.1 μS (DXF-1820) / 1.0 ± 0.1 μS (DXF-1820CE)]





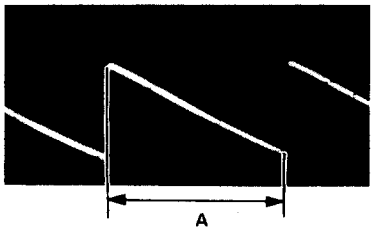
VF-18 board (component side)

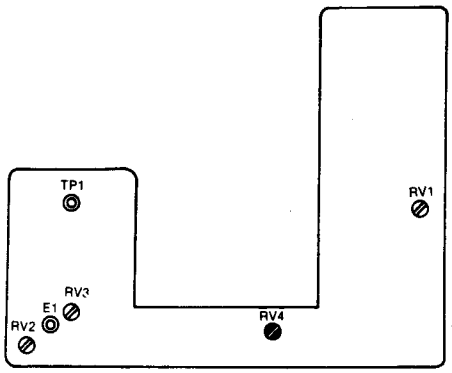


VF-19 board (component side)

3-3-4. V Hold Adjustment

Equipment : Oscilloscope
Test point : TP1/VF-19 board
Trig : CN1-1 pin/VF-19 board
Adj point : ◐RV4/VF-19 board
Spec : A = [20.0 ± 0.5 mS (DXF-1820) / 24.4 ± 0.5 mS (DXF-1820CE)]



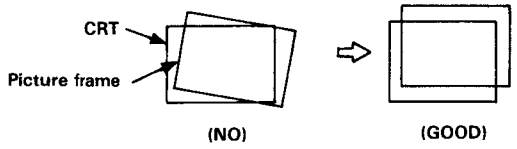


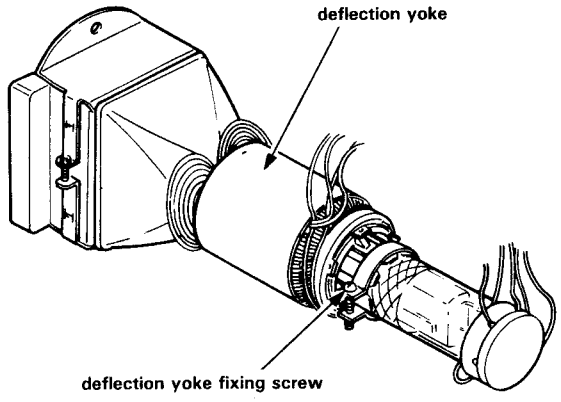
VF-19 board (component side)

3-3-5. Deflection Yoke Tilt Adjustment

Note : Since 3-3-5. Deflection Yoke Tilt Adjustment 3-3-6. V.H Deflection Size Adjustment, and 3-3-7. Centering Adjustment affect each other, repeat the adjustments alternately until the desired values are obtained.

Adjustment :
1. Loosen the deflection yoke fixing screw and turn the deflection yoke until the tilt of the viewfinder picture is corrected.
2. After performing the adjustment, tighten the fixing screw while pressing the deflection yoke against the cathode-ray tube.





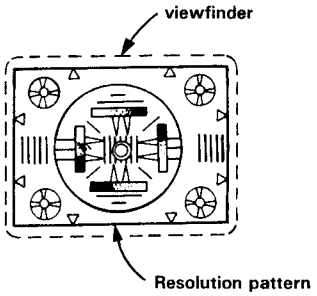
3-3-6. V.H Deflection Size Adjustment

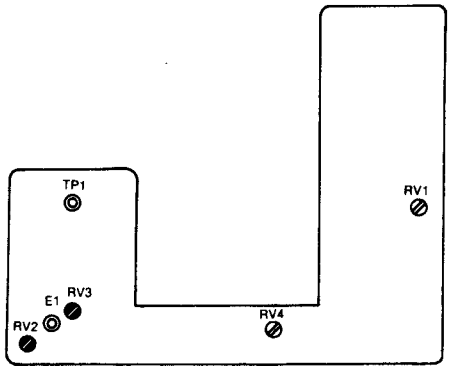
Note : Since 3-3-5. Deflection Yoke Tilt Adjustment 3-3-6. V.H Deflection Size Adjustment, and 3-3-7. Centering Adjustment affect each other, repeat the adjustments alternately until the desired values are obtained.

Object : Resolution Pattern

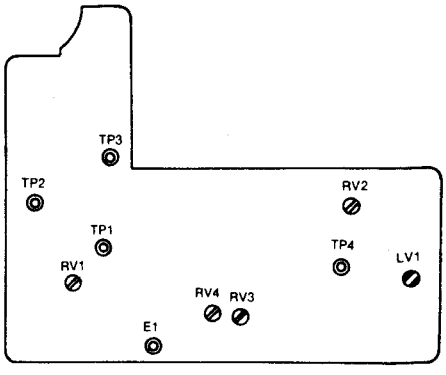
Preparation :
1. Set the external BRIGHT and CONTR controls to the mechanical center position.
2. Adjust the lens' zoom control so that the resolution pattern fills the monitor screen (reduced scan).

Adjustment :
1. Adjust ◐ RV2 (V SIZE) and ◐ RV3 (V LIN)/VF-19 board so that the picture's hight becomes 97±1% (3±1% reduced scan) of viewfinder screen's hight with best longitudinal balance of the circle.
2. Adjust ◐ RV2 (H SIZE) and ◐ LV1 (H LIN)/VF-18 board so that the picture's width becomes 98±1% (2±1% reduced scan) of viewfinder screen's width with best lateral balance of the circle.





VF-19 board (component side)

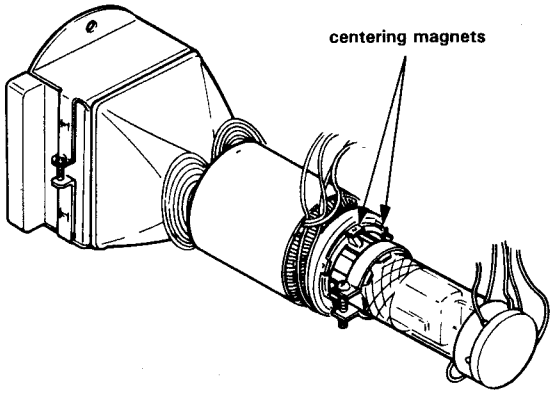


VF-18 board (component side)

3-3-7. Centering Adjustment

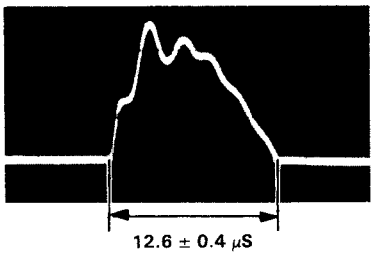
Note : Since 3-3-5. Deflection Yoke Tilt Adjustment 3-3-6. V.H Deflection Size Adjustment, and 3-3-7. Centering Adjustment affect each other, repeat the adjustments alternately until the desired values are obtained.

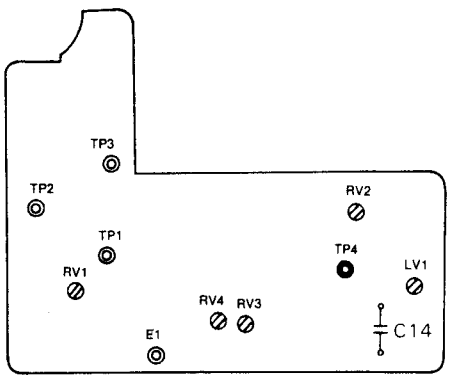
Adjustment : Turn the two centering magnets until the H and V centerings are obtained.



3-3-8. FB Pulse Width Adjustment

Equipment : Oscilloscope
Test point : TP4 (GND:E1)/VF-18 board
Trig : TP4/VF-18 board
Adjustment : Choose 0.0015μF, 0.0022μF or 0.0033μF for C14/VF-18 board to satisfy the specification.

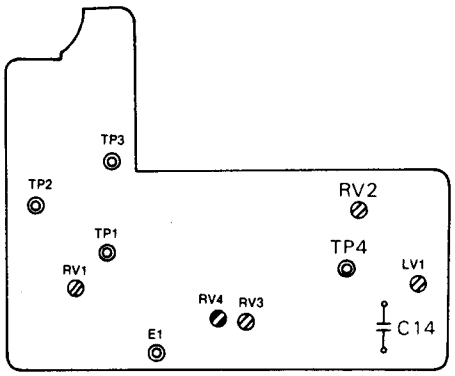




VF-18 board (component side)

3-3-9. Bright Cal Adjustment

Object : Resolution pattern
Preparation : Turn ◐ RV1/SW-91 board (BRIGHTNESS) → fully counterclockwise↺
Turn ◐ RV2/SW-91 board (CONTRAST) → fully clockwise↻
Adjustment : Adjust the picture by turning ◐RV4/VF-18 counterclockwise from the rightmost position so that the black and white gradation scale is black up to the third step and the fourth step is recognizable.



VF-18 board (component side)

5-3 ELECTRICAL PARTS LIST

VF-18 BOARD

Ref. No.	Parts No.	Description
⚠	A-7511-942-A	MOUNTED CIRCUIT BOARD "VF-18"
C1	**1-163-031-00**	**CERAMIC CHIP 0.01 50V**
C2	**1-124-139-00**	**ELECT 100 20% 10V**
C3	**1-124-139-00**	**ELECT 100 20% 10V**
C4	**1-123-647-00**	**ELECT 47 20% 6.3V**
C5	**1-123-611-00**	**ELECT 1 20% 50V**
C6	**1-123-617-00**	**ELECT 10 20% 16V**
C7	**1-163-247-00**	**CERAMIC CHIP 68PF 5% 50V**
C8	**1-163-015-00**	**CERAMIC CHIP 0.0033 10% 50V**
C9	**1-163-227-00**	**CERAMIC CHIP 10PF 5% 50V**
C10	**1-123-383-00**	**ELECT 4.7 20% 100V**
C11	**1-131-374-00**	**TANTALUM 33 10% 16V**
C12	**1-131-371-00**	**TANTALUM 10 10% 16V**
⚠ **C13**	**1-108-375-00**	**MYLAR 0.0068 10% 100V**
⚠ **C14**	**1-108-367-00**	**MYLAR 0.0015 10% 100V**
⚠	**1-108-369-00**	**MYLAR 0.0022 10% 100V**
⚠	**1-108-371-00**	**MYLAR 0.0033 10% 100V**
C15	**1-102-047-00**	**CERAMIC 0.01 99% 1KV**
C16	**1-102-047-00**	**CERAMIC 0.01 99% 1KV**
C17	**1-130-802-00**	**POLYESTER 0.022 5% 400V**
C18	**1-108-421-00**	**MYLAR 0.01 10% 200V**
CN1	1-564-007-00	RECEPTACLE, 8P MALE
CN2	1-564-004-00	RECEPTACLE, 5P MALE
	1-562-150-00	PLUG HOUSING 5P
	1-564-026-00	PLUG CONTACT
CN3	1-564-002-00	RECEPTACLE, 3P MALE
	1-562-148-00	PLUG HOUSING 3P
	1-564-026-00	PLUG CONTACT
CN4	1-564-004-00	RECEPTACLE, 5P MALE
	1-562-150-00	PLUG HOUSING 5P
	1-564-026-00	PLUG CONTACT
CN5	1-564-001-00	RECEPTACLE, 2P MALE
	1-562-147-00	PLUG HOUSING 2P
	1-564-026-00	PLUG CONTACT
CN6	1-564-001-00	RECEPTACLE, 2P MALE
	1-562-147-00	PLUG HOUSING 2P
	1-564-026-00	PLUG CONTACT

Ref. No.	Parts No.	Description
D1	**8-719-100-38**	**RD6.2EB2**
⚠ **D2**	**8-719-100-38**	**RD6.2EB2**
D3	**8-719-100-05**	**1S2837**
D5	**8-719-100-38**	**RD6.2EB2**
D8	**8-719-100-03**	**1S2835**
D9	**8-719-300-76**	**RH1A**
⚠ **HT1**	**1-453-087-31**	**HIGH VOLTAGE BLOCK**
IC1	**1-759-145-58**	**μPC4558C: NEC**
L1	**1-407-169-XX**	**MICRO 100**
L2	**1-407-165-XX**	**MICRO 47**
L3	**1-407-168-XX**	**MICRO 82**
L4	**1-407-169-XX**	**MICRO 100**
LV1	**1-459-203-00**	**HORIZONTAL LINEARITY COIL**
Q1	**8-729-100-66**	**2SC1623**
Q2	**8-729-100-66**	**2SC1623**
Q3	**8-729-100-66**	**2SC1623**
Q4	**8-729-100-66**	**2SC1623**
Q5	**8-729-100-66**	**2SC1623**
Q6	**8-729-100-66**	**2SC1623**
Q7	**8-729-100-66**	**2SC1623**
Q8	**8-727-587-28**	**2SC756-872**
Q10	**8-729-100-66**	**2SC1623**

NOTE:

1. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
R1	1-216-073-00	METAL CHIP 10K 5% 1/10W
R2	1-216-043-00	METAL CHIP 560 5% 1/10W
⚠ R3	1-215-440-00	METAL 6.2K 1% 1/6W
⚠ R4	1-215-430-00	METAL 2.4K 1% 1/6W
R5	1-216-073-00	METAL CHIP 10K 5% 1/10W
R6	1-216-089-00	METAL CHIP 47K 5% 1/10W
R7	1-216-089-00	METAL CHIP 47K 5% 1/10W
R8	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R9	1-216-069-00	METAL CHIP 6.8K 5% 1/10W
R10	1-216-071-00	METAL CHIP 8.2K 5% 1/10W
R11	1-216-049-00	METAL CHIP 1K 5% 1/10W
R12	1-216-037-00	METAL CHIP 330 5% 1/10W
R13	1-216-043-00	METAL CHIP 560 5% 1/10W
R14	1-216-049-00	METAL CHIP 1K 5% 1/10W
R15	1-216-069-00	METAL CHIP 6.8K 5% 1/10W
R16	1-216-065-00	METAL CHIP 4.7K 5% 1/10W
R17	1-216-065-00	METAL CHIP 4.7K 5% 1/10W
R18	1-216-069-00	METAL CHIP 6.8K 5% 1/10W
R19	1-216-057-00	METAL CHIP 2.2K 5% 1/10W
R20	1-216-095-00	METAL CHIP 82K 5% 1/10W
R21	1-216-025-00	METAL CHIP 100 5% 1/10W
R22	1-216-085-00	METAL CHIP 33K 5% 1/10W
R23	1-216-041-00	METAL CHIP 470 5% 1/10W
R24	1-216-049-00	METAL CHIP 1K 5% 1/10W
R25	1-216-073-00	METAL CHIP 10K 5% 1/10W
R26	1-216-073-00	METAL CHIP 10K 5% 1/10W
R27	1-216-027-00	METAL CHIP 120 5% 1/10W
R28	1-216-041-00	METAL CHIP 470 5% 1/10W
R29	1-216-049-00	METAL CHIP 1K 5% 1/10W
R30	1-216-009-00	METAL CHIP 22 5% 1/10W
R31	1-216-057-00	METAL CHIP 2.2K 5% 1/10W
R32	1-214-971-00	METAL 2M 1% 1/4W
R33	1-215-489-00	METAL 680K 1% 1/6W
R34	1-215-474-00	METAL 160K 1% 1/6w
R35	1-216-027-00	METAL CHIP 120 5% 1/10W
R36	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R37	1-216-049-00	METAL CHIP 1K 5% 1/10W
R38	1-216-025-00	METAL CHIP 100 5% 1/10W
⚠ RV1	1-228-888-00	METAL 1K
RV2	1-228-452-00	METAL 50
RV3	1-226-279-00	METAL 2M
RV4	1-228-897-00	METAL 470K

Ref. No.	Parts No.	Description
VF-19 BOARD		
⚠	A-7511-943-A	MOUNTED CIRCUIT BOARD "VF-19"
C1	1-123-617-00	ELECT 10 20% 16V
C3	1-131-346-00	TANTALUM 0.68 10% 35V
C4	1-123-608-00	ELECT 0.22 20% 50V
C5	1-130-481-00	MYLAR 0.0068 5% 50V
C6	1-130-479-00	MYLAR 0.0047 5% 50V
C7	1-163-031-00	CERAMIC CHIP 0.01 50V
C8	1-163-035-00	CERAMIC CHIP 0.01 50V
C9	1-131-37400	TANTALUM 33 10% 16V
C10	1-131-347-00	TANTALUM 1 10% 35V
C11	1-124-141-00	ELECT 330 20% 10V
C12	1-130-481-00	MYLAR 0.0068 5% 50V
C13	1-123-611-00	ELECT 1 20% 50V
C14	1-130-487-00	MYLAR 0.022 5% 50V
C15	1-123-617-00	ELECT 10 20% 16V
C16	1-124-139-00	ELECT 100 20% 10V
C17	1-163-031-00	CERAMIC CHIP 0.01 50V
C18	1-123-617-00	ELECT 10 20% 16V
C19	1-123-902-00	ELECT 0.68 20% 50V
C20	1-123-661-00	ELECT 100 20% 6.3V
C21	1-124-135-00	ELECT 470 20% 6.3V
C22	1-163-009-00	CERAMIC CHIP 0.001 10% 50V
CN1	1-564-005-00	RECEPTACLE, 6P MALE
	1-562-151-00	PLUG HOUSING 6P
	1-564-026-00	PLUG CONTACT
CN2	1-564-001-00	RECEPTACLE, 2P MALE

NOTE:

1. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
D1	8-719-101-23	1SS123
⚠ IC1	8-759-300-28	HA11423MP: HITACHI
Q1	8-729-100-66	2SC1623
Q2	8-729-100-66	2SC1623
Q3	8-729-100-76	2SA812
⚠ R1	1-216-109-00	METAL CHIP 330K 5% 1/10W
⚠ R2	1-216-083-00	METAL CHIP 27K 5% 1/10W
R3	1-216-067-00	METAL CHIP 5.6K 5% 1/10W
R4	1-216-049-00	METAL CHIP 1K 5% 1/10W
R5	1-216-075-00	METAL CHIP 12K 5% 1/10W
R6	1-216-093-00	METAL CHIP 68K 5% 1/10W
R7	1-216-079-00	METAL CHIP 18K 5% 1/10W
R8	1-216-071-00	METAL CHIP 8.2K 5% 1/10W
R9	1-216-083-00	METAL CHIP 27K 5% 1/10W
R10	1-216-027-00	METAL CHIP 120 5% 1/10W
R11	1-216-073-00	METAL CHIP 10K 5% 1/10W
R12	1-216-097-00	METAL CHIP 100K 5% 1/10W
R13	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R14	1-216-025-00	METAL CHIP 100 5% 1/10W
R15	1-216-025-00	METAL CHIP 100 5% 1/10W
R16	1-216-093-00	METAL CHIP 68K 5% 1/10W
R17	1-216-071-00	METAL CHIP 8.2K 5% 1/10W
R18	1-216-009-00	METAL CHIP 22 5% 1/10W
R19	1-216-067-00	METAL CHIP 5.6K 5% 1/10W
R20	1-216-081-00	METAL CHIP 22K 5% 1/10W
R21	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R22	1-216-059-00	METAL CHIP 2.7K 5% 1/10W
R23	1-215-377-00	METAL 15 1% 1/6W
R24	1-215-377-00	METAL 15 1% 1/6W
R25	1-216-097-00	METAL CHIP 100K 5% 1/10W
RV1	1-228-890-00	METAL 4.7K
RV2	1-228-888-00	METAL 1K
RV3	1-228-887-00	METAL 470
RV4	1-228-890-00	METAL 4.7K

Ref. No.	Parts No.	Description
SW-91 BOARD		
	1-610-102-00	PRINTED CIRCUIT BOARD "SW-91"
RV1	1-230-075-00	METAL 2K "BRIGHTNESS"
RV2	1-230-075-00	METAL 2K "CONTRAST"
S1	1-554-078-21	SLIDE
FRAME		
	1-526-540-00	SOCKET, CRT
⚠	1-546-043-21	PICTURE TUBE 40LB4
CN1	1-934-096-00	8P PLUG WITH HARNESS (VF)
CN2	1-451-233-00	DEFLECTION YOKE
D6	8-719-905-56	EBR5504S LED "TALLY"
D8	8-719-800-25	TLR109A "REC"
D9	8-719-800-25	TLR109A "BATTERY"
D10	8-719-800-25	TLR109A "LOW LIGHT"
D11	8-719-800-12	TLO102A "+18 dB"
Q9	8-729-315-63	2SB856

NOTE:

1. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No. Parts No. Description

Ref. No. Parts No. Description

PACKING MATERIAL & ACCESSORIES (SUPPLIED)

2-391-442-00	INDIVIDUAL CARTON
2-381-443-00	CUSHION, UPPER
2-381-444-00	CUSHION, LOWER
3-701-630-00	**BAG, POLYETHYLENE (FOR MANUAL)**
3-701-613-00	**BAG, POLYETHYLENE (FOR DXF-1820/P)**
3-773-425-11	**MANUAL, INSTRUCTION (FOR AEP,UK)**
3-773-425-21	**MANUAL, INSTRUCTION (FOR U/C)**

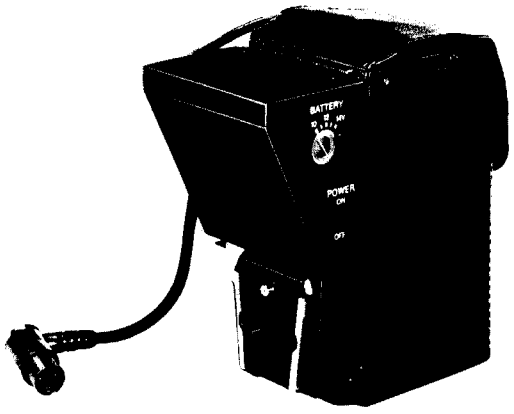
NOTE:

1. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

BATTERY ADAPTOR

DC-6



SPECIFICATIONS

Usable battery:	BP-60 Sony battery pack
Output voltage:	DC 11 to 14.5 V With auto shut-off mechanism, battery meter
Weight:	300 g (11 oz)
Dimensions:	71 x 132 x 120 mm (W/H/D)

SONY®

SERVICE MANUAL

TABLE OF CONTENTS

1. GENERAL DESCRIPTION 1-1

2. ALIGNMENT

2-1. Equipment Required 2-1
2-2. Cut Off Voltage Adjustment 2-1
2-3. Battery Meter Adjustment 2-1

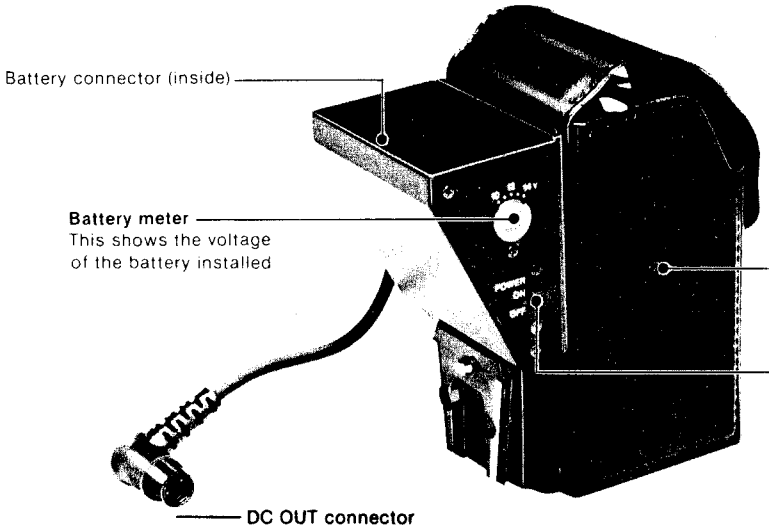
3. DIAGRAM

3-1. Mounting Diagram 3-1
3-2. Schematic Diagram 3-2

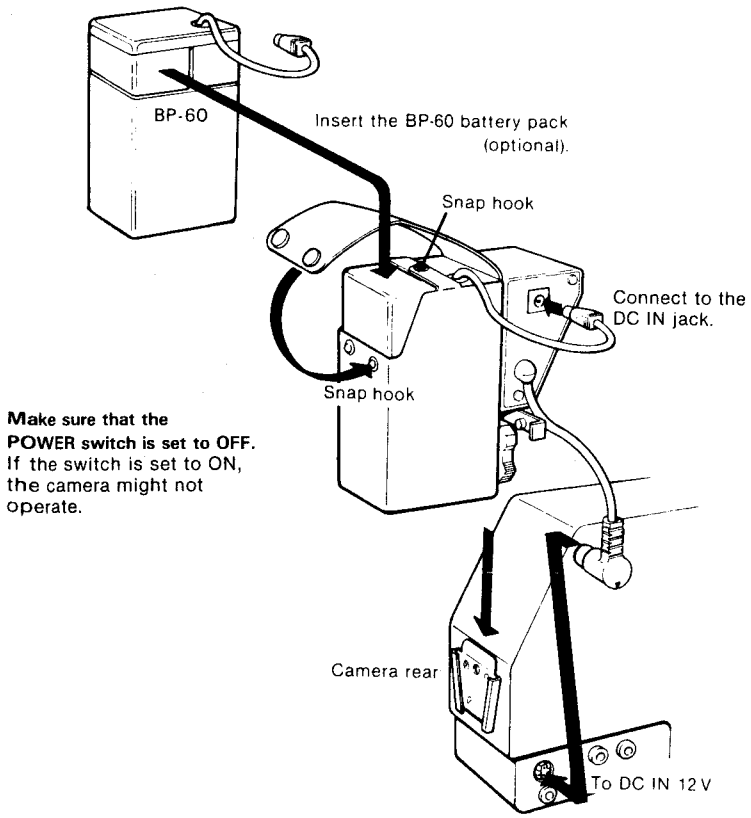
4. SPARE PARTS

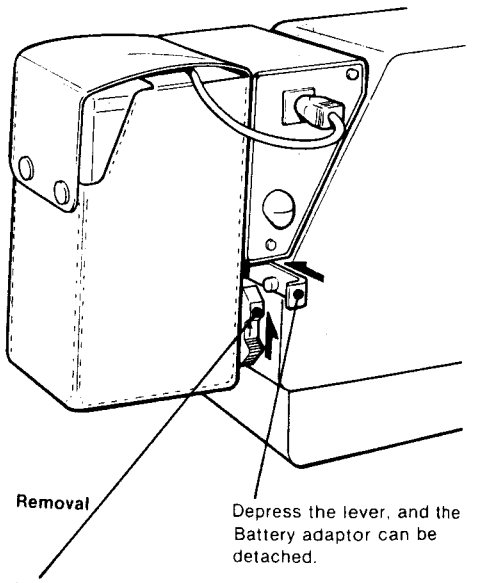
4-1. Exploded View 4-1
4-2. Electrical Parts List 4-2

SECTION 1
GENERAL DESCRIPTION


Battery connector (inside)
Battery meter
This shows the voltage of the battery installed
Battery compartment
POWER switch
Power is supplied to the camera as soon as this switch is set to ON.
Always set it to the OFF position when mounting the adapter onto the camera.
DC OUT connector

Mounting the adaptor onto the camera

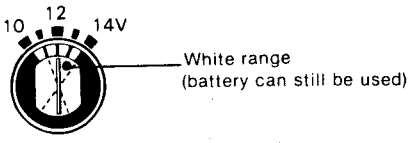

BP-60
Insert the BP-60 battery pack (optional).
Snap hook
Connect to the DC IN jack.
Snap hook
Make sure that the POWER switch is set to OFF.
If the switch is set to ON, the camera might not operate.
Camera rear
To DC IN 12 V


Removal
Depress the lever, and the Battery adaptor can be detached.
Lock knob
If this knob is set to the raised position, the above lever cannot be depressed. Use this knob to prevent the lever from shifting out of place during use.

Battery life

A fully-charged battery allows about 1 hour and 30 minutes of continuous at normal temperatures.

The pointer of the Battery meter on the Battery Adaptor indicates battery condition when the POWER switch on the adaptor is set to ON. A white-scale reading indicates that the battery is in good condition; a red-scale reading indicates that the battery is exhausted.



When the battery is exhausted the pointer of the battery meter swings to the red zone and the power to the camera will be switched off automatically to prevent over-discharging the battery. When this happens, set the POWER switch on the adaptor to OFF and install a new, charged battery pack.

Notes

- Be sure to set the POWER switch to OFF when replacing the exhausted battery with a charged one, or the camera will not operate. If the camera does not operate when a new battery is installed, set the POWER switch to OFF, then set it to ON again.
- The operating life of the battery will be shortened when it is very cold or when it is exhausted. When the operating period of a recharged battery is less than 30 minutes at normal temperature, the battery should be changed with a new one.

Battery charging

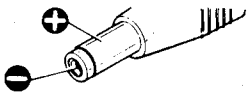
Charge the battery immediately after use using the BC-1000 or BC-20 Battery Charger. Do not permit the battery to remain discharged.

The battery can be charged with the AC Power Adaptor supplied with the portable VTR.

Please refer to the instruction manual supplied with the battery charger for details on recharging.

- When the battery pack is not used for a long time, be sure to recharge it every six months.
- When very heavily discharged batteries are put on charge, the charging lamp will not light, giving an erroneous "full-charge" indication. Should this occur, allow several hours, or even several days, to reach a charging condition as indicated by the charging lamp. If the batteries still cannot be recharged, replace them with new batteries.

- Do not use any battery pack other than that manufactured by Sony. Polarity of the battery plug of other packs may differ.



SECTION 2
ALIGNMENT

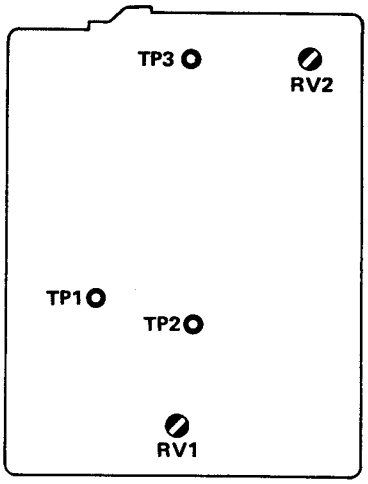
2-1. EQUIPMENT REQUIRED

- Regulated DC Power Supply (DC output voltage: 9 ~ 15 V)

2-2. CUT OFF VOLTAGE ADJUSTMENT

Equipment : DC power supply
Adj point : ⊘RV1/DC-8 board

Adjust : Apply a 12 V dc to the DC IN, and then decrease the applied voltage gradually.
Adjust ⊘RV1/DC-8 board so that the relay contact is disconnected at 10.8 ± 0.05 V dc between pin 2 and pin 5 of CN2 (DC OUT).

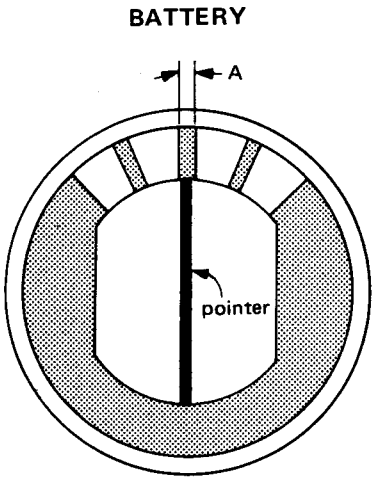


DC-8 board (component side)

2-3. BATTERY METER ADJUSTMENT

Equipment : DC power supply
Adj point : ⊘RV2/DC-8 board

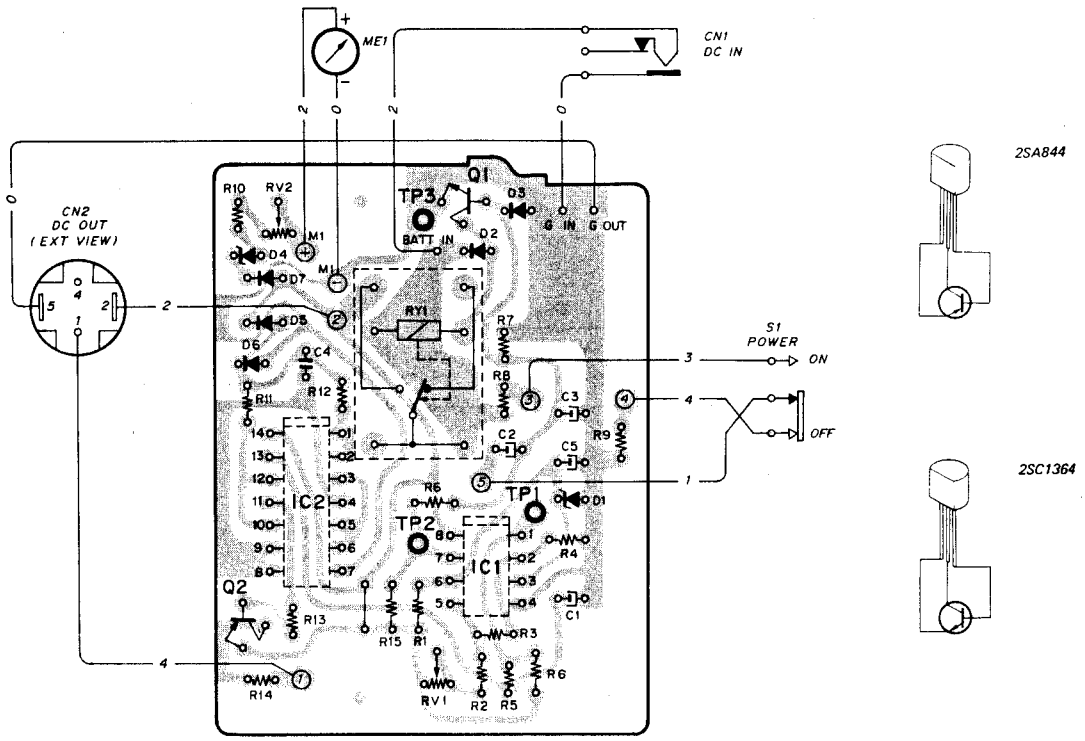
Adjust : Apply a 12 ± 0.1 V dc to the DC IN.
Adjust ⊘RV2/DC-8 board so that the pointer of the battery meter swings in the specified position "A".



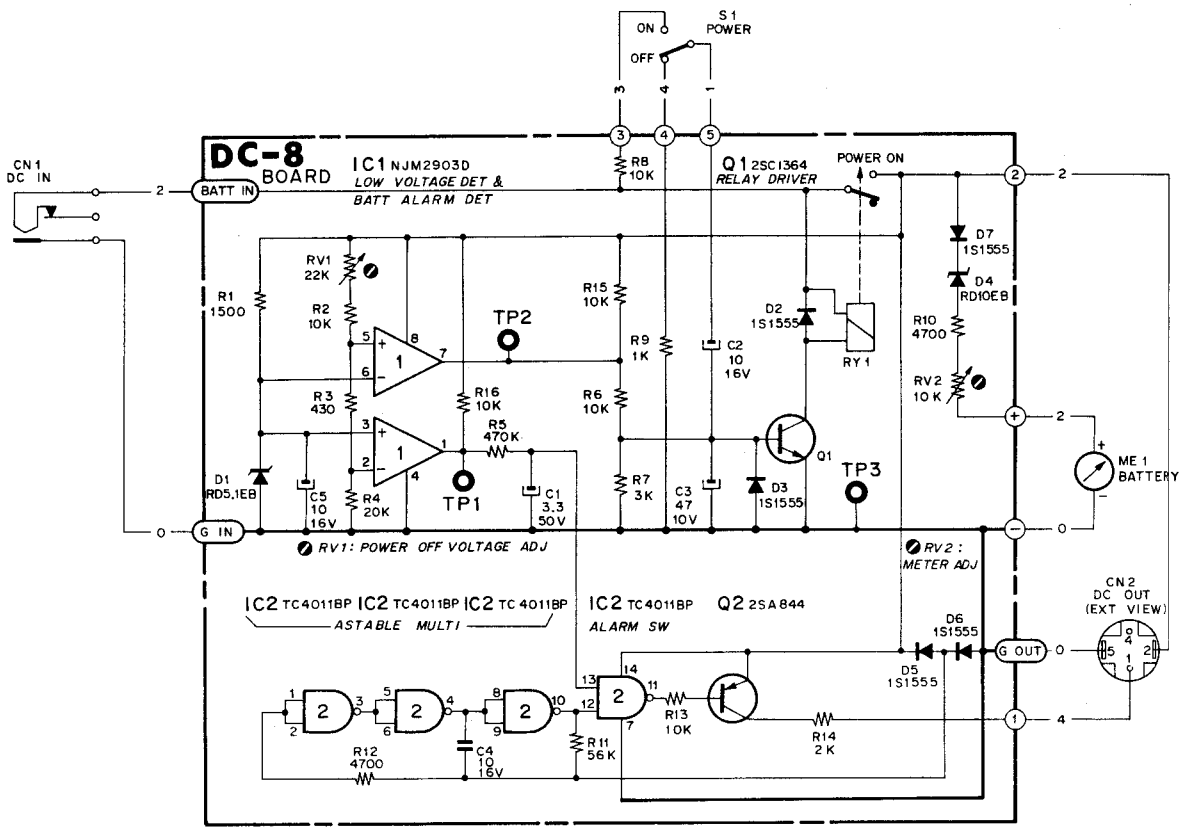
SECTION 3
DIAGRAM

3-1. MOUNTING DIAGRAM

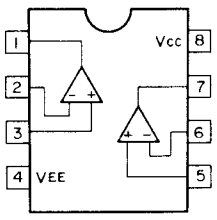
– SOLDERING SIDE –



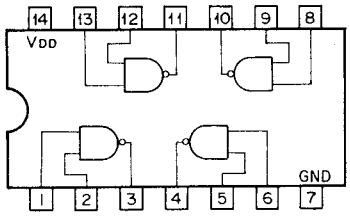
3-2 SCHEMATIC DIAGRAM

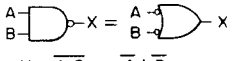


NJM2903D (JRC)
OPERATIONAL AMPLIFIER
-TOP VIEW-



TC4011BP (TOSHIBA)
C-MOS 2-INPUT NAND GATE
-TOP VIEW-





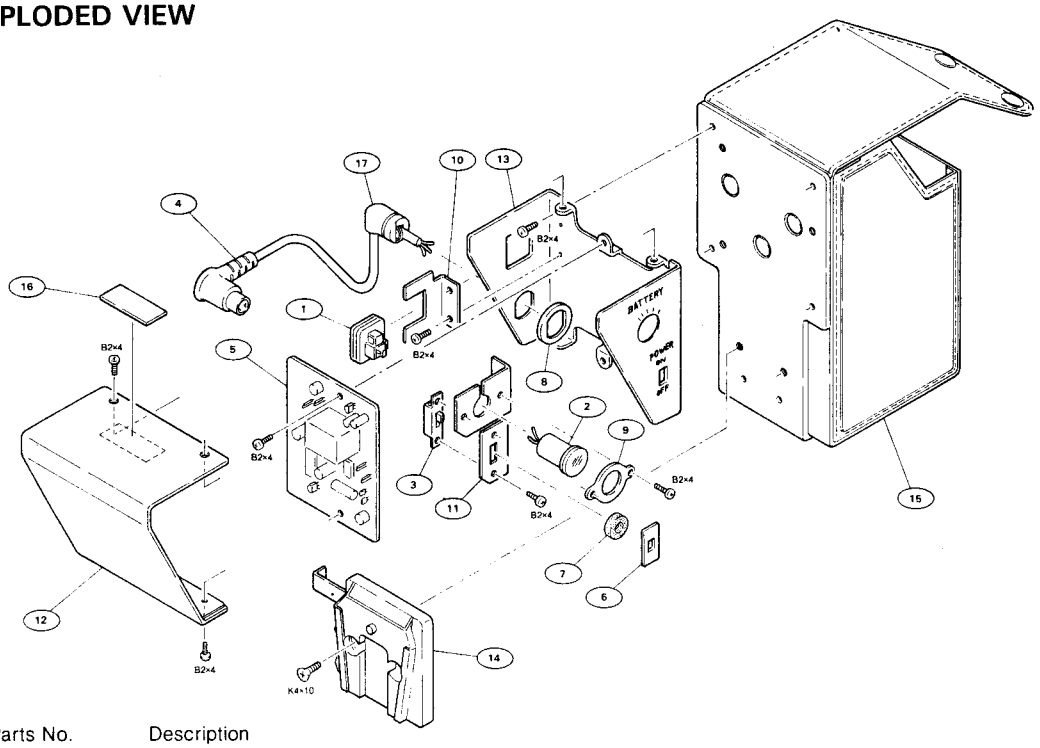
A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

SECTION 4
SPARE PARTS

4-1. PARTS INFORMATION

1. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to **"accommodating the improved parts and/or engineering changes"** or **"standardization of genuine parts."**
   - This manual's exploded views and electrical spare parts list are indicating the parts numbers of "the standardized genuine parts at present".
   - Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.
2. **Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

4-2. EXPLODED VIEW



No.	Parts No.	Description
1	**1-507-465-00**	**JACK (CN1, DC IN)**
2	**1-520-427-00**	**METER, LEVEL (ME1, BATTERY)**
3	**1-552-822-00**	**SWITCH, SLIDE (S1, POWER)**
4	**1-555-458-00**	**PLUG (CN2, DC OUT)**
5	1-603-027-00	PRINTED CIRCUIT BOARD "DC-8"
6	2-277-408-00	COVER, SWITCH
7	2-277-409-00	CUSHION, SWITCH COVER
8	2-277-502-00	STOPPER, BUSHING
9	2-277-503-00	RETAINER, METER
10	2-277-504-00	STOPPER, JACK PLATE
11	2-277-505-00	STOPPER, METER SWITCH
12	2-277-506-00	COVER
13	2-277-507-00	CASE
14	2-277-509-00	SHOE, QUICK
15	**2-277-510-00**	**CASE, SOFT**
16	**3-701-690-00**	**LABEL**
17	**3-703-001-00**	**BUSHING, CORD**

NOTE:

1. Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
2. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

4-3 ELECTRICAL PARTS LIST

Ref. No.	Parts No.	Description
	A-7401-042-A	BATTERY ADAPTOR: DC-6
DC-8 BOARD		
	1-603-027-00	PRINTED CIRCUIT BOARD "DC-8"
C1	**1-123-613-00**	**ELECT 3.3 20% 50V**
C2	**1-123-617-00**	**ELECT 10 20% 16V**
C3	**1-123-822-00**	**ELECT 47 20% 10V**
C4	**1-121-806-00**	**ELECT NONPOLAR 10 16V**
C5	**1-123-617-00**	**ELECT 10 20% 16V**
CN1	**1-507-465-00**	**JACK "DC IN"**
D1	**8-719-151-07**	**RD5.1E-B**
D2	**8-719-815-55**	**1S1555**
D3	**8-719-815-55**	**1S1555**
D4	**8-719-110-07**	**RD10E**
D5	**8-719-815-55**	**1S1555**
D6	**8-719-815-55**	**1S1555**
D7	**8-719-815-55**	**1S1555**
IC1	**8-759-729-03**	**NJM2903D: JRC**
IC2	**8-759-240-11**	**TC4011BP (CD4011BE: RCA)**
M1	**1-520-427-00**	**BATTERY**
Q1	**8-729-633-47**	**2SC1364**
Q2	**8-729-384-48**	**2SA844**
R1	**1-246-785-00**	**CARBON 1.5K 5% 1/8W**
R2	**1-214-581-00**	**METAL 10K 1% 1/8W**
R3	**1-214-548-00**	**METAL 430 1% 1/8W**
R4	**1-214-588-00**	**METAL 20K 1% 1/8W**
R5	**1-247-049-00**	**CARBON 470K 5% 1/8W**
R6	**1-246-795-00**	**CARBON 10K 5% 1/8W**
R7	**1-246-849-00**	**CARBON 3K 5% 1/8W**
R8	**1-246-795-00**	**CARBON 10K 5% 1/8W**
R9	**1-246-783-00**	**CARBON 1K 5% 1/8W**
R10	**1-247-844-00**	**CARBON 3.6K 5% 1/8W**
R11	**1-246-804-00**	**CARBON 56K 5% 1/8W**
R12	**1-246-791-00**	**CARBON 4.7K 5% 1/8W**
R13	**1-246-795-00**	**CARBON 10K 5% 1/8W**
R14	**1-246-847-00**	**CARBON 2K 5% 1/8W**
R15	**1-246-795-00**	**CARBON 10K 5% 1/8W**
R16	**1-246-795-00**	**CARBON 10K 5% 1/8W**
RV1	**1-226-773-00**	**METAL 22K**
RV2	**1-226-710-00**	**SOLID 10K**
RY1	**1-515-380-00**	**12V 400Ω**
S1	**1-552-822-00**	**SLIDE "POWER"**
FRAME		
CN2	**1-555-458-00**	**CORD WITH DC PLUG, 4P "DC OUT"**

NOTE:

Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

DXC-1820P/1821P

TECHNICAL INFORMATION

— INTERCHANGEABILITY OF BOARD —

VE-5 BOARD
PR-46 BOARD
DF-21 BOARD
CR-21 BOARD

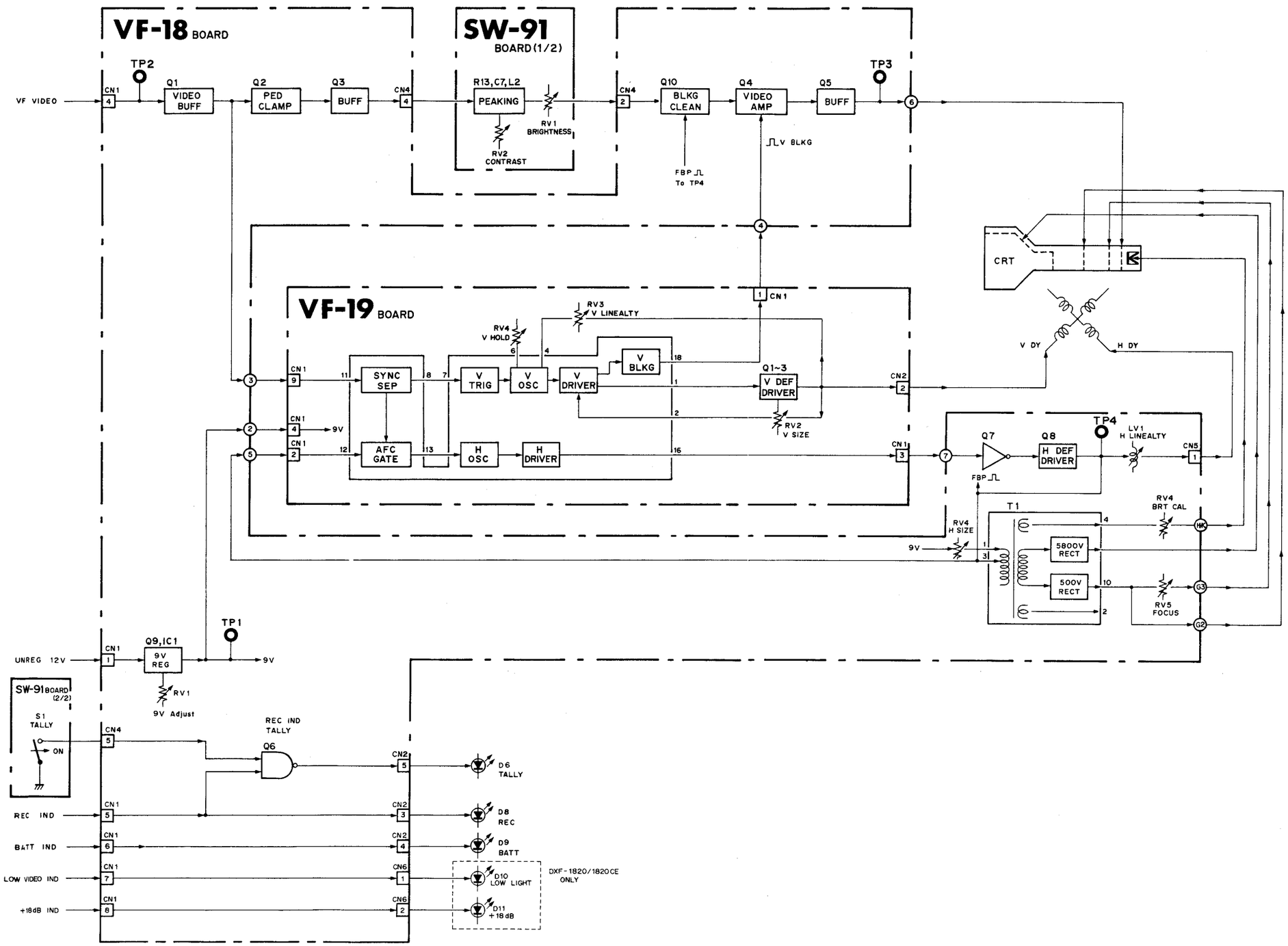
DXC-1820P/1821P (EK)
9-966-770-61

Sony Corporation
© 1984

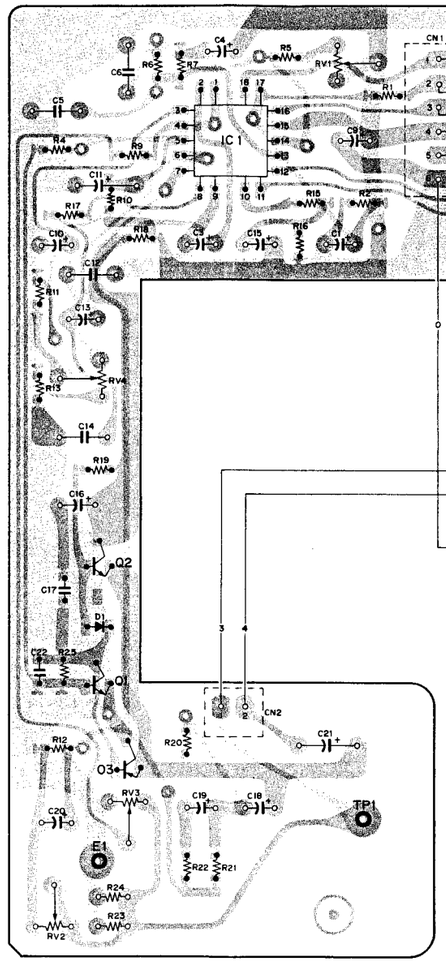
Printed in Japan
1984. 5. 08

SECTION 4
DIAGRAM

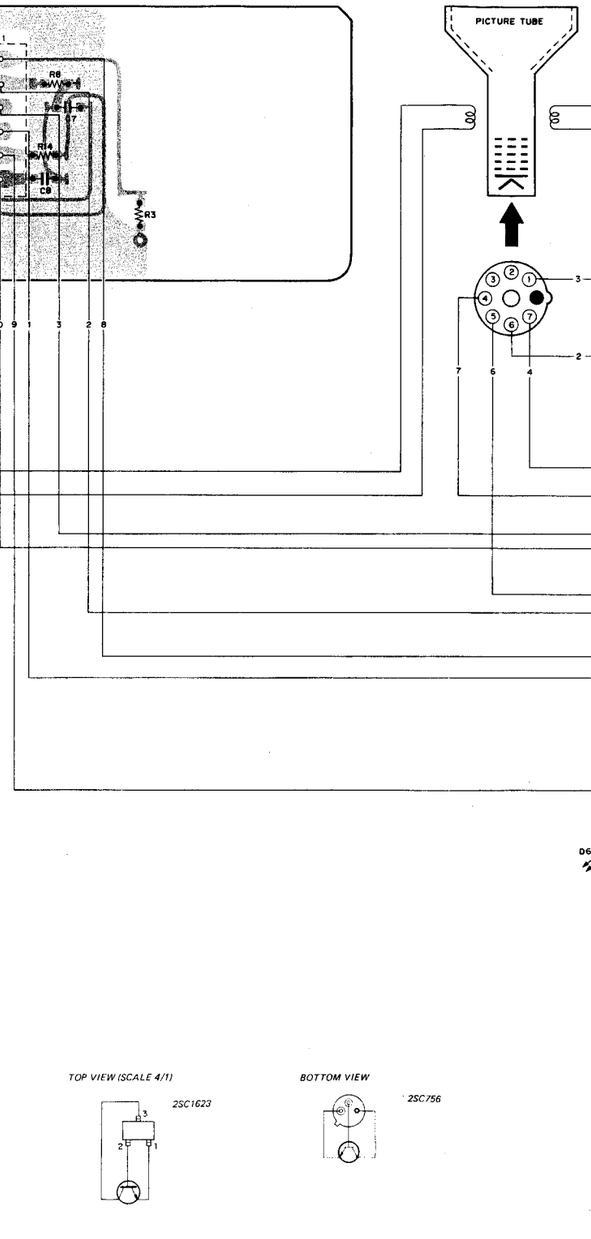
4-1. BLOCK DIAGRAM



4-2. MOUNTING DIAGRAM



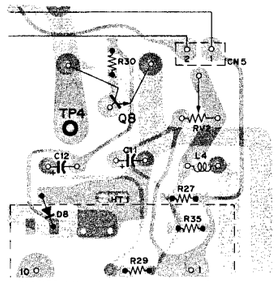
—SOLDERING SIDE—
VF-19 BOARD-11,12
DXF-M3(J,U/C)
DXF-M3P(AEP,UK)
DXF-1820(J,UC)
DXF-1820CE(EK)



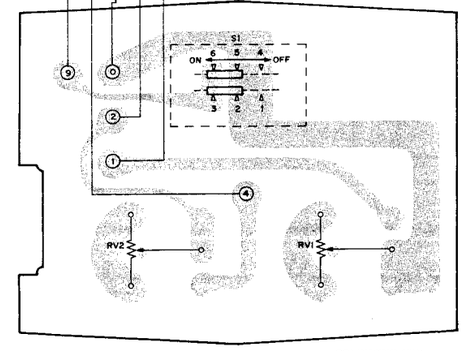
DXF-1820/1820CE ONLY

CN1
VF
(EXT VIEW)

—SOLDERING SIDE—
VF-18 BOARD-12,13
DXF-M3 (J) 20091~
DXF-M3 (U/C) 10211~
DXF-M3CE(AEP) 10151~
DXF-M3CE(UK) 15051~
DXF-M3CE(BRZ) 10001~
DXF-1820(J,UC) 10001~
DXF-1820CE(EK) 10001~

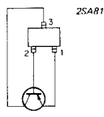


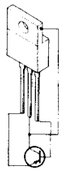
—SOLDERING SIDE—
VF-18 BOARD-11
DXF-M3 (J) 20001~20090
DXF-M3 (U/C) 10001~10210
DXF-M3P(AEP) 10001~10150
DXF-M3P(UK) 15001~15050



—SOLDERING SIDE—
SW-91 BOARD-11
DXF-M3 (J,U/C)
DXF-M3CE(AEP,UK,BRZ)
DXF-1820(J,UC)
DXF-1820CE(EK)

TOP VIEW (SCALE 4/1)

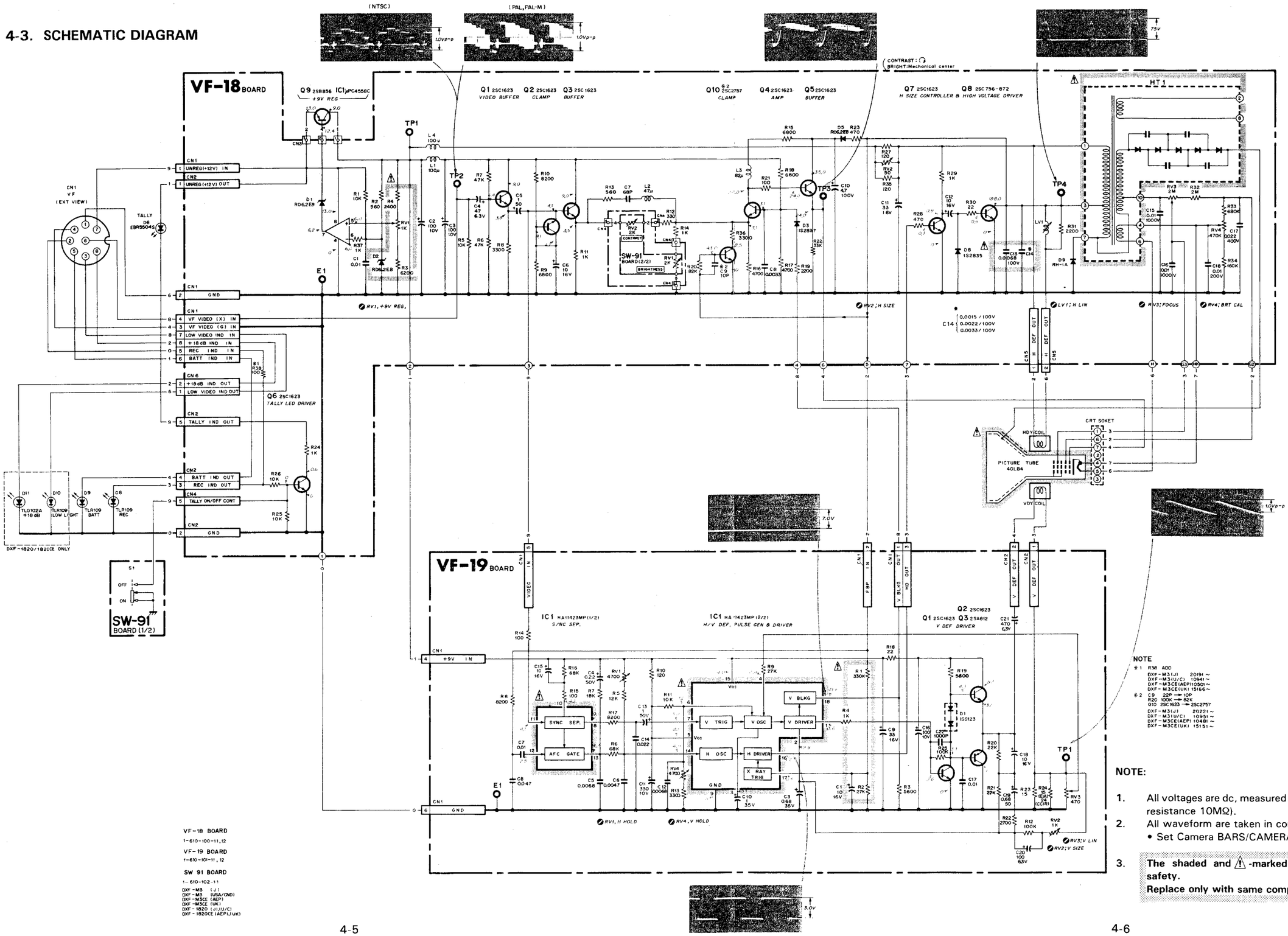




TOP VIEW (SCALE 4/1)

BOTTOM VIEW

4-3. SCHEMATIC DIAGRAM



VF-18 BOARD
1-610-100-11,12

VF-19 BOARD
1-610-101-11,12

SW 91 BOARD
1-610-102-11

DXF-M3 (J)
DXF-M3 (USA/CND)
DXF-M3CE (AEP)
DXF-M3CE (UK)
DXF-1820 (J/U/C)
DXF-1820CE (AEP,UK)

NOTE

*1 R38 ADD
DXF-M3(J) 20191 ~
DXF-M3(U/C) 10941 ~
DXF-M3CE(AEP)11050 ~
DXF-M3CE(UK) 15166 ~

*2 C9 22P → 10P
R20 100K → 82K
Q10 2SC1623 → 2SC2757
DXF-M3(J) 20221 ~
DXF-M3(U/C) 10951 ~
DXF-M3CE(AEP) 10481 ~
DXF-M3CE(UK) 15151 ~

NOTE:

1. All voltages are dc, measured with a digital volt meter (input resistance 10MΩ).
2. All waveform are taken in condition below.
   • Set Camera BARS/CAMERA switch at "BARS".
3. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same component as specified.

SECTION 5
SPARE PARTS

5-1. PARTS INFORMATION

1. **Safety Related Component Warning**

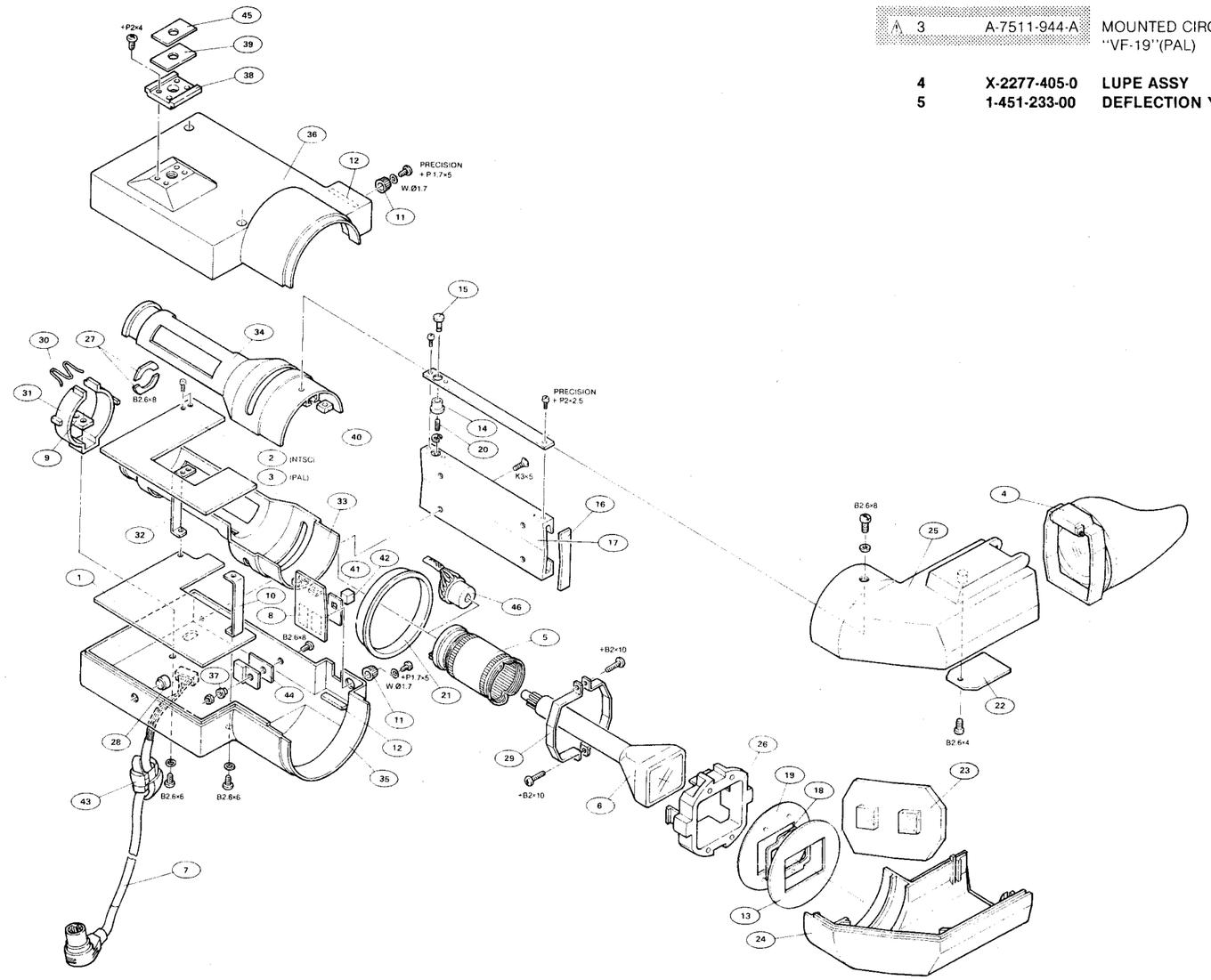
   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.

2. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to **"accommodating the improved parts and/or engineering changes"** or **"standardization of genuine parts."**
   - This manual's exploded views and electrical spare parts list are indicating the parts numbers of "the standardized genuine parts at present".
   - Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.

3. **Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

4. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

5-2. EXPLODED VIEW



No.	Parts No.	Description
⚠ 1	A-7511-942-A	MOUNTED CIRCUIT BOARD "VF-18"
⚠ 2	A-7511-943-A	MOUNTED CIRCUIT BOARD "VF-19"(NTSC)
⚠ 3	A-7511-944-A	MOUNTED CIRCUIT BOARD "VF-19"(PAL)
4	**X-2277-405-0**	**LUPE ASSY**
5	**1-451-233-00**	**DEFLECTION YOKE**
⚠ **6**	**1-546-043-21**	**PICTURE TUBE 40LB4**
7	1-556-889-21	CODE (WITH DIN PLUG) 8P
8	1-610-102-00	PRINTDE CIRCUIT BOARD "SW-91"
9	2-277-451-00	NUT, PLATE
10	2-277-452-00	BRACKET, PC BOARD
11	2-277-453-00	KNOB CONTROL
12	2-277-454-00	CUSHION, SWITCH
13	2-277-455-02	PLATE, ORNAMENTAL, CRT
14	2-277-456-00	STOPPER, COLER
15	2-277-457-00	KNOB, STPPER
16	2-277-458-00	ROBBER, STOPER
17	2-277-459-00	GAIDE, VF SHELDE
18	2-277-464-00	ILLUMINATOR
19	2-277-465-00	SHEET, ADHESILE, LABEL
20	2-277-466-20	SPRING, COMPRESSION
21	2-381-409-00	RING, SLEEVE
22	2-381-410-00	SPRING
23	2-381-411-00	MIRROR
24	2-381-412-00	CASE (LOWER),CRT
25	2-381-413-00	CASE (UPPER),CRT
26	2-381-419-00	HOLDER, CRT
27	2-381-420-00	CLAMP, CRT
28	2-381-421-00	HOLDER, LED
29	2-381-423-00	BAND, CRT
30	2-381-424-00	SPRING
31	2-381-425-00	HOLDER, CASE CRT
32	2-381-427-00	BRACKET (A), PC BORAD
33	2-381-428-03	CASE (REAR) (1), CRT
34	2-381-429-03	CASE (REAR) (2), CRT
35	2-381-435-03	COVER (LOWER), VF
36	**2-381-436-03**	**COVER (UPPER), VF**
37	**2-832-007-00**	**BUSHING (K), INSULATING**
38	3-657-700-00	BRACKET, ACCESSORY
39	3-672-213-00	SHEET, ADHESIVE
40	3-673-015-00	PLATE, NUT (M2.6)
41	3-680-604-00	PLATE, BLIND
42	3-680-605-00	CAP, SLIDE
43	**3-703-001-00**	**BUSHING, CORD**
44	**3-703-037-00**	**INSULATOR, TO-220**
45	2-277-468-00	PLATE, ORNAMENTAL, CAMERA SHOE
46	1-526-540-00	PLUG, 8P (WITH HARNESS)

NOTE:

1. **The shaded and ⚠ -marked components are critical to safety. Replace only with same components as specified.**
2. Parts printed in Bold-Face type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

T. 1

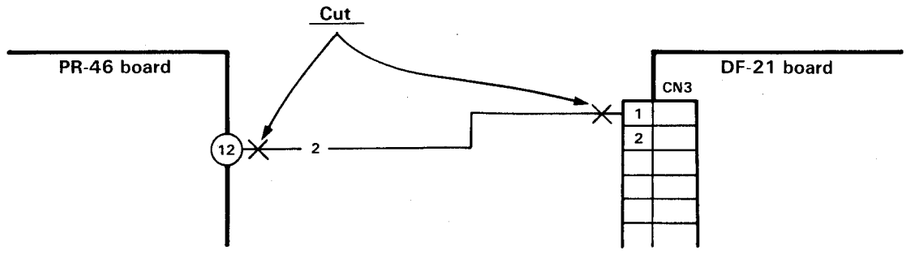
Matrix of Board Interchangeability

1. When replace the board, Perform modification see the following matrix table.
2. See the modification next page more. (MOD-A to MOD-G)
3. O-mark means that the interchangeability is no problem.

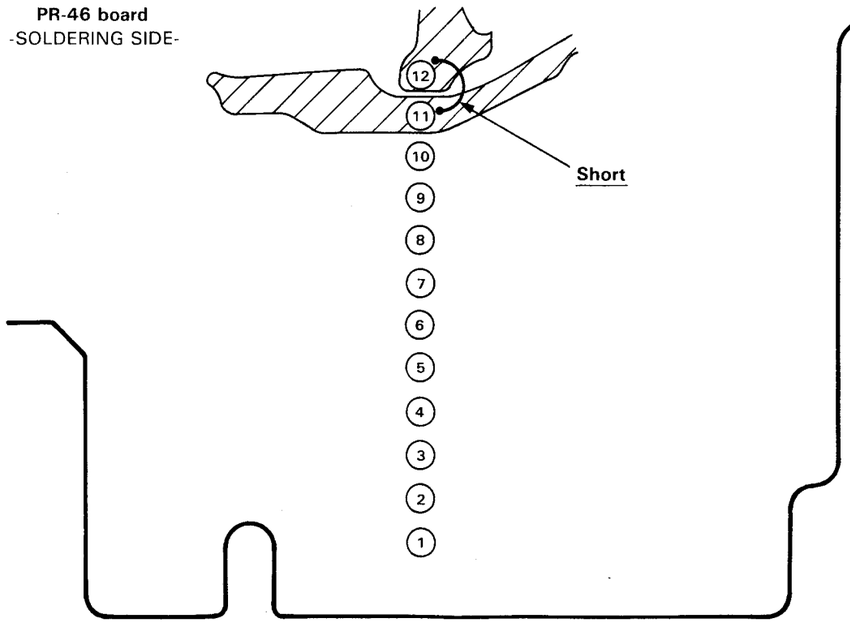
BOARD / MODEL	VE-5	PR-46		DF-21		CR-21	
	A-7513-015-A (1-611-220-11, 12~)	A-7513-014-A (1-611-214-11)	A-7513-014-B (1-611-214-12, 13~)	A-7513-017-A (1-611-212-11)	A-7513-017-B (1-611-212-12, 13~)	A-7513-012-A (1-611-213-11)	A-7513-012-B (1-611-213-12, 13~)
DXC-1820P 10001~10300	Perform {MOD-A MOD-B	○	Perform {MOD-A MOD-C	○	Perform {MOD-B MOD-C MOD-E	○	Perform MOD-F
DXC-1820P 10301~11400 DXC-1821P 50001~50100	○	Perform MOD-B	○	Perform {MOD-A MOD-D	○	Perform MOD-G	○
DXC-1820P 11401~ DXC-1821P 50101~	○	Perform {MOD-A MOD-B	○	Perform MOD-D	○	Perform MOD-G	○

MODIFICATION

Perform MOD-A



Perform MOD-B



Perform MOD-C

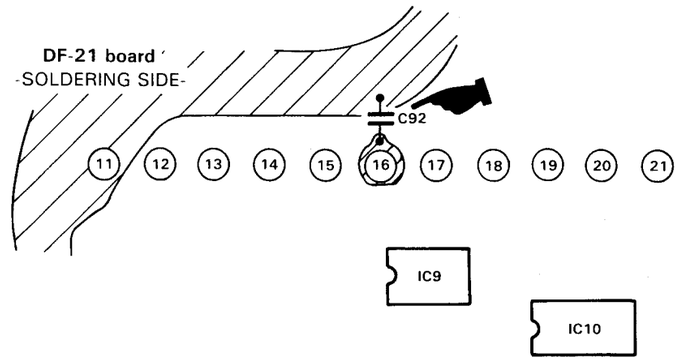
Replace from installed VE-5 board to new VE-5 board.
(A-7513-015-A)

Perform MOD-D

Add C92/DF21

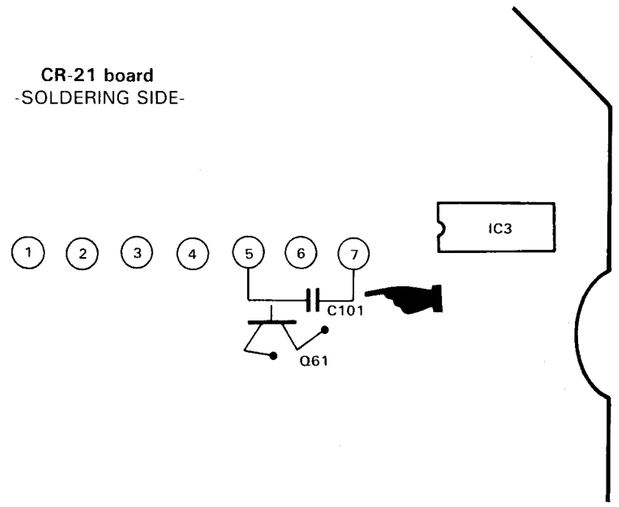
Perform MOD-E

Delete C92/DF-21



Perform MOD-F

Add C101/CR21

Perform MOD-G

Delete C101/CR-21